COSTS AROUND THE WORLD *p. 96*

3rd Quarterly Cost Roundup

ENGINEERING NEWS-RECORD

SEPT. 17, 1959

PRICE 50 CENTS

CONTENTS ON PAGE 37

Labor costs: Big hike in '59, another coming in '60 *p. 72*

A McGraw-Hill Publication

Nationwide Capacity

For dependable service
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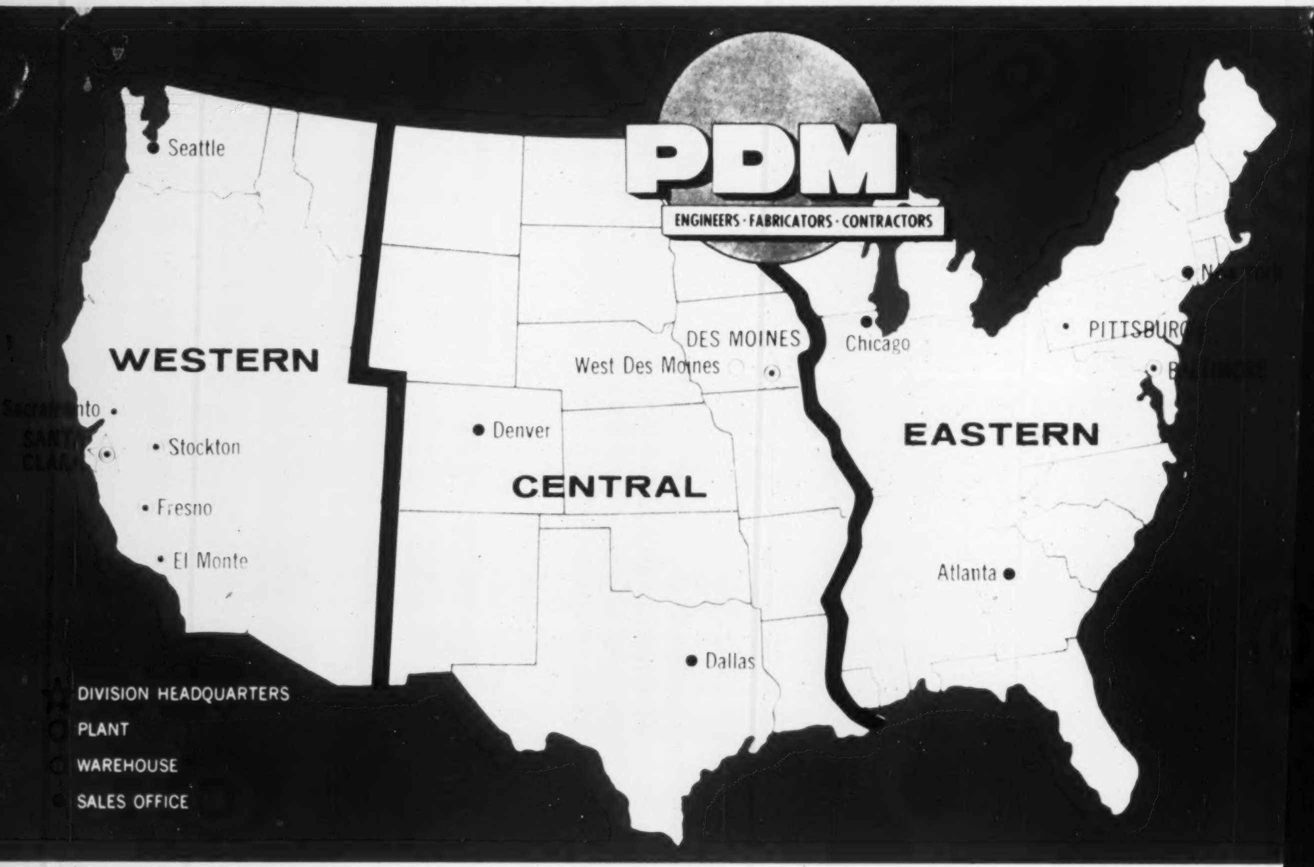
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As one of America's largest independent steel fabricators, Pittsburgh-Des Moines maintains seven fabricating plants for the production of platework and structural components, six steel warehouses, a large field construction organization, and a network of branch offices staffed with qualified engineers who are trained for effective customer service. Whatever your requirements may be . . . from wind tunnels, bridges, storage tanks, to steel grandstands . . . you'll find PDM men and resources near at hand to handle them. We will welcome an opportunity to consult with you and submit quotations. Write, phone or wire.

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It's making the grade—at a 13-to-1 saving!

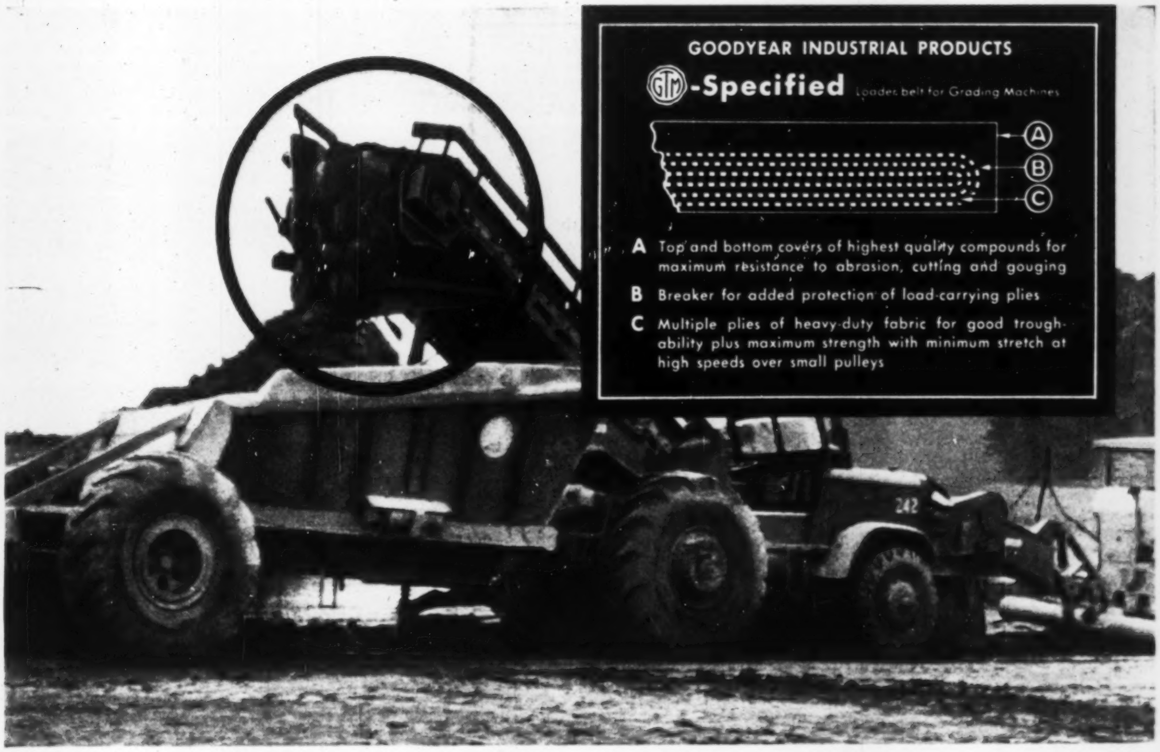
When this top Eastern road builder hit a particularly tough, 18-mile stretch of grading, the belts on his big earth-loaders just couldn't take it. Under the staggering flow of 20% to 30% shale and rock, they failed after only 25,000 cubic yards. And replacements ran $2,000-plus apiece.

An SOS went out for the G.T.M.—Goodyear Technical Man. After some study, he recommended a belt especially designed for loader service. It's muscled with heavy-duty fabric for maximum strength with minimum stretch. And its super-tough cover is highly resistant to cutting, gouging and abrasion.

The pay-off: The G.T.M.'s belt handled 97,000 cubic yards on the first cut alone – *a phenomenal 337,000 cubic yards of the same murderous material—without a single take-up—before retirement.* That's 13 times previous belt life—*more than $25,000 saved—per loader.*

Even tremendous savings like these aren't unusual when the G.T.M. tackles the problem. To cash in on his famed cost-cutting abilities, contact him through your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*



GOODYEAR INDUSTRIAL PRODUCTS

G.T.M.-Specified Loader belt for Grading Machines

A Top and bottom covers of highest quality compounds for maximum resistance to abrasion, cutting and gouging

B Breaker for added protection of load-carrying plies

C Multiple plies of heavy-duty fabric for good troughability plus maximum strength with minimum stretch at high speeds over small pulleys

CONVEYOR BELTS BY

GOODYEAR

THE GREATEST NAME IN RUBBER

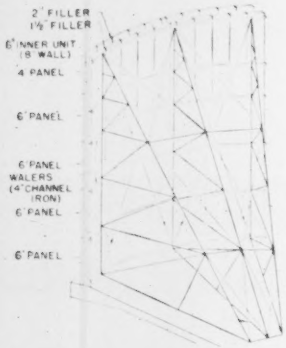
CIRCLE 1 READER SERVICE CARD

Weight 4 Tons

New Use for Symons Steel-Ply Forms

28′ Circular Walls Ganged for Sewage Plant

Friebel & Hartman, Shelby, Ohio contractor, with the use of a crane was able to strip and reset 2,300 square feet of forms on inside gang section in 3½ hours. And 8 men in less than 8 hours erected 2,300 square feet of forms and scaffolding on outside plus pouring the concrete. The project was the Mansfield, Ohio Sewage Treatment Plant, which consisted of four digestors.



Four ganged sections were used—each 22 feet wide and 28 feet high. This allowed pouring ⅓ of a tank at a time, and a pour every four working days. Weight of each ganged form was about four tons. A ¾ yard Lorain with an 80′ boom handled the sections.

Complete story on the Ohio Sewage Treatment Plant will be sent FREE upon request. Symons Forms may be rented with purchase option.

Symons

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4265 Diversey Ave., Dept. J-9, Chicago 39, Ill.
Warehouses Thruout the U.S.A.

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EIGHTY-FIFTH YEAR OF PUBLICATION

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HERE'S A REALLY TOUGH JOB!

You're looking down one of the really tough jobs now under way. The job is the "Second Barrel" of the water line for San Diego, Calif. The ditch is 26 ft. deep at this point. In places it ran to 34 ft. The material is tough conglomerate—in some spots so hard that teeth were ground away in two hours.

Two Northwest Model 80-Ds are handling the tough assignment. There were miles of blue granite which had to be blasted, and because of the rugged terrain the machines often had to work on heavy grades.

The contractor is Lee H. Woods & Sons. Mr. Woods is a contractor and operator of long experience. What he says is borne out by the performance of the Northwests on his job and the many other rock jobs that Northwests have handled. Mr. Woods says, "I have sat in the seat of shovels for 28 years before going into the contracting business myself, and my many years of experience have convinced me that, when it comes to rock, Northwests are the best of all. That's why in one of the toughest jobs ever attempted in the West, I bought two 80-Ds."

— And, remember that a *real* Rock Shovel makes the going easier and the output greater in ANY DIGGING.

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CRANES
SHOVELS
DRAGLINES
PULLSHOVELS
TRUCK CRANES

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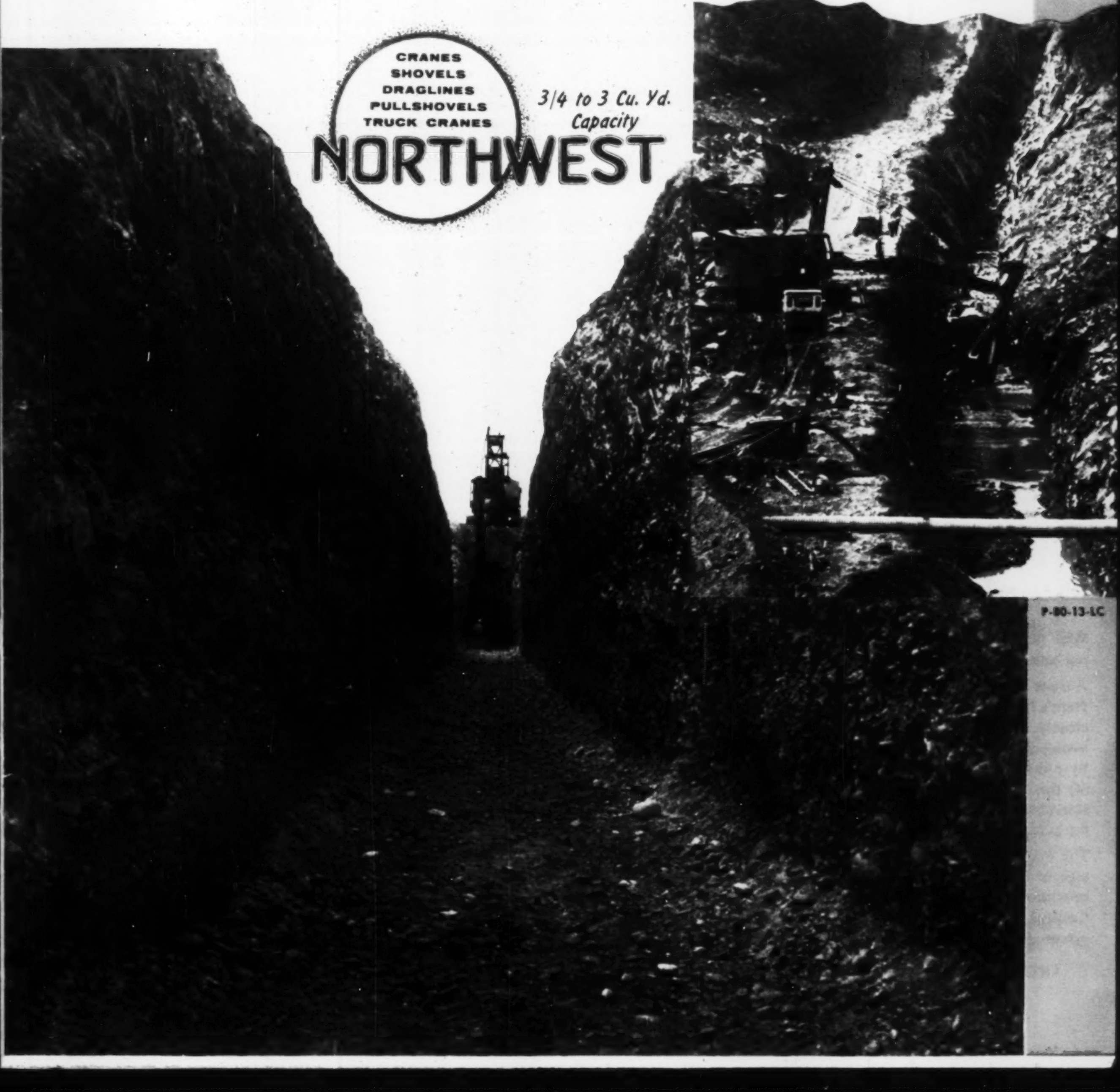
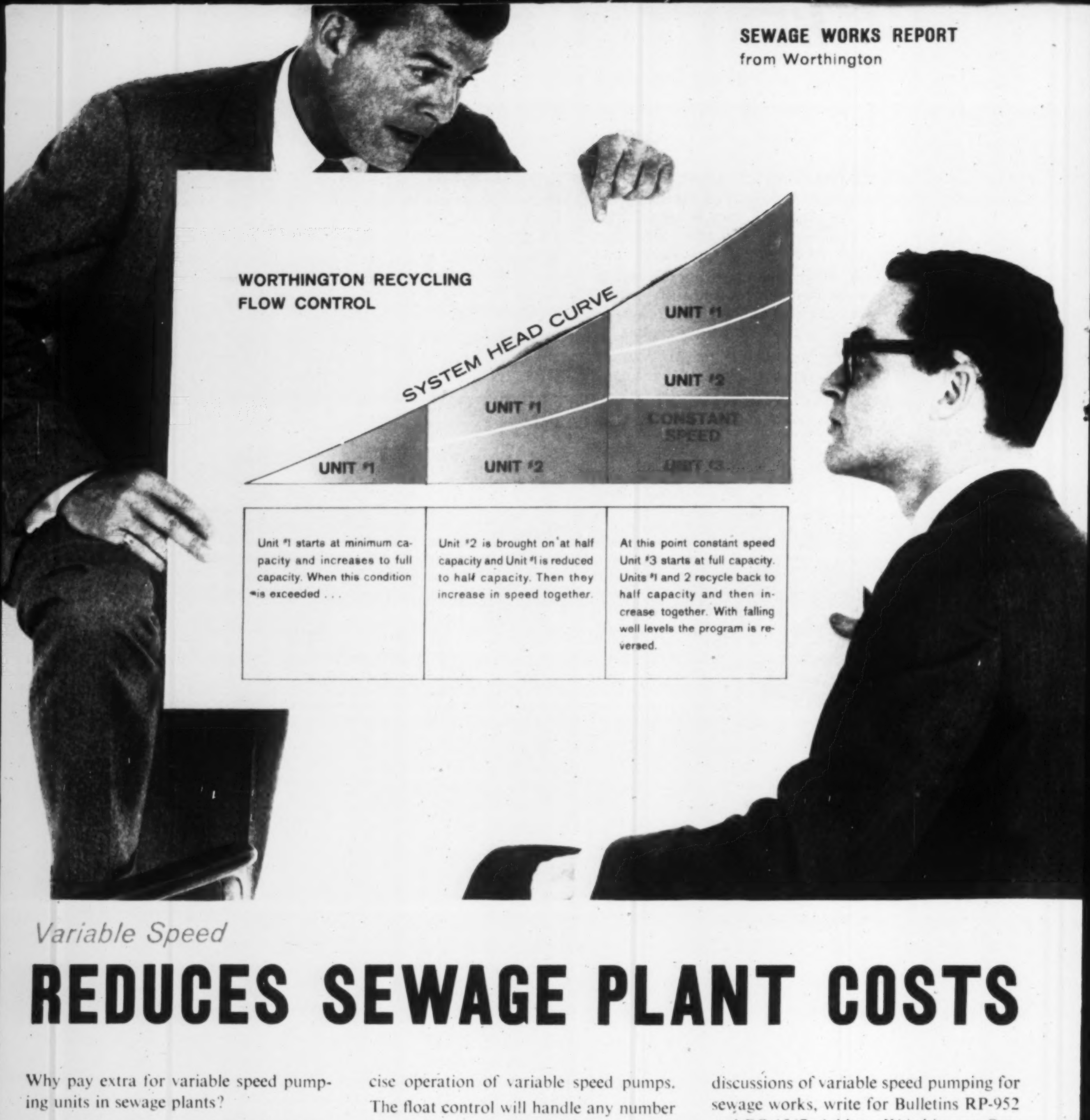
3/4 to 3 Cu. Yd. Capacity

P-80-13-LC



SEWAGE WORKS REPORT
from Worthington



Unit #1 starts at minimum capacity and increases to full capacity. When this condition is exceeded . . .	Unit #2 is brought on at half capacity and Unit #1 is reduced to half capacity. Then they increase in speed together.	At this point constant speed Unit #3 starts at full capacity. Units #1 and 2 recycle back to half capacity and then increase together. With falling well levels the program is reversed.

Variable Speed

REDUCES SEWAGE PLANT COSTS

Why pay extra for variable speed pumping units in sewage plants?

Answer: it saves money in the long run. Here's how: (1) pumping rates are always closely matched to flow, (2) surges are avoided, (3) automatic pumping cuts costs by reducing the number of men needed, (4) the collecting well can be made considerably smaller because it can be designed for average instead of maximum flow.

The system that takes maximum advantage of the possibilities of variable speed operation is Worthington's Recycling Flow Control. Operated by a Worthington engineered control, the system maintains precise operation of variable speed pumps. The float control will handle any number of variable speed and constant speed pumps. How it works in a plant with two variable speed and one constant speed pump is shown above.

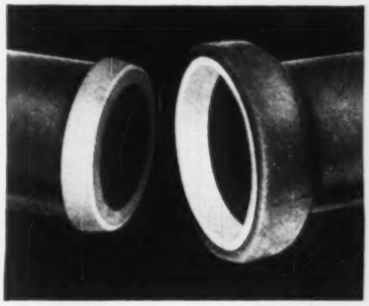
The Recycling Flow Control is the latest development of Worthington's continuous work in the public works field. It's another reason that to get the best and the latest you should come to Worthington first. Major public works products include: pumps, comminutors, compressors, engines, and turbines.

If you would like copies of engineering discussions of variable speed pumping for sewage works, write for Bulletins RP-952 and RP-1067. Address Worthington Corporation, Section 105-5, Harrison, N. J. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

CIRCLE 4 READER SERVICE CARD

longer, stronger AMVIT Jointed Clay Pipe prevents infiltration SIX WAYS



Bottletight, Factory-Made Joint of Plasticized Resins of Polyvinyl-chloride gives lower cost-in-place

Engineering standard and specifications for sanitary sewers are written so that both the contractor and the community can obtain the best type of construction.

They limit the amount of infiltration in sewer pipe joints, which, in turn, reduces pumping and treatment plant costs. Amvit* Jointed Clay Pipe was especially designed to achieve best possible results.

1. FACTORY-MADE QUALITY

The Amvit Joint is manufactured from plasticized resins of polyvinyl-chloride. No other combination of materials is used or needed. It is applied on the pipe by a special manufacturing process and delivered to the job site ready for immediate installation.

2. DESIGN PREVENTS LEAKS

The Amvit Joint is a compression type joint based on the ball and socket principle. The material on the spigot end is a convex shape, with the bell end in a concave shape. Simply pushing the pipe together "makes" the joint, keeping the surfaces of the bell and spigot rings in constant compression. Thus, infiltration, exfiltration, and root penetration are prevented.

3. QUICK, FOUL-PROOF INSTALLATION

The joint is on the pipe delivered to the job site ready for immediate installations. No other materials such as caulking, joint compound, hot pots, or ladles are needed to make the Amvit Joint.

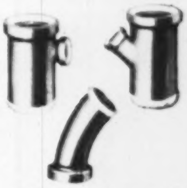
4. PERMITS DEFLECTION, ABSORBS SHOCKS

Amvit is made from a plastic which has many characteristics similar to rubber. It is pliable, permitting deflection without leakage. It is resilient, can absorb shocks, and vibration.

5. BETTER FLOW, LESS MAINTENANCE

The design of the joint assures that the pipe is self-centered at all times. This gives perfect alignment and self-cleansing action. Because the joint is really tight, no foreign matter such as dirt, sand, or stones can possibly enter the line.

6. COMPLETE FITTINGS



Amvit is furnished on all standard fittings, as well as pipe. This will permit a uniformly tight line from house to treatment plant.

Amvit Jointed Clay Pipe, in sizes 4" through 24", together with all fittings is available for immediate delivery in the Northeast and Central States.

For more information on how Amvit can help cut your sewer installation costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you, for this descriptive folder.

*T. M. Registered

SINCE 1848

AMERICAN

American Vitrified Products Company

CLEVELAND OHIO

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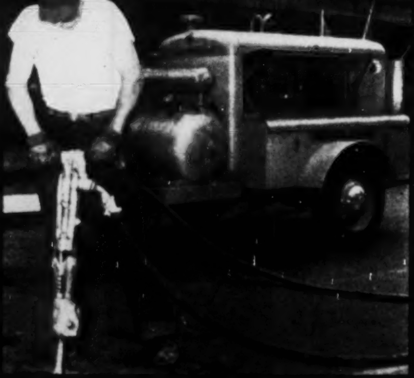
BUILT TO BOOST CONTRACTOR PROFITS

POWER VANE ROTARY COMPRESSORS ...REALLY GET AROUND

There's a CP "Power Vane" Rotary for every construction job that relies on air power. Whether the need is for a highly maneuverable 2-wheel unit for street openings, or a 900 c.f.m. unit for pile driving operations – there's a CP Rotary "ready to roll" on an around-the-clock basis. Exclusive fitted-step construction of the mating surfaces of all housings make CP "Power Vane" Rotaries the "truest running units" in the business. "Vapor trail lubrication" creates an air-oil mixture that serves as a lubricant, coolant, and pressure seal. Available in sizes of 125, 250, 365, 600 and 900 c.f.m.

Ask your CP equipment distributor for more details . . . or write for Catalog 734. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*



REAL PORTABILITY in this CP-125 pneumatic two-wheel unit. Wheel spacing same as standard 60" truck wheels for easy towing. Full length tool box carries all necessary breakers, steel and accessories. Capacity 125 c.f.m. at 100 psi.

EASILY MANEUVERED into tight spots is this CP-250 high-output, two-wheel unit. Available with either 6 cylinder gasoline engine or 4 cylinder diesel engine. Capacity 250 c.f.m. at 100 psi.

PAIR 'EM UP for real team work on hard rock drilling operations. These CP-600 units equipped with 6 cylinder diesel engine will easily meet the heavy air demands of big construction projects. Capacity 600 c.f.m. at 100 psi.

FOR THE REAL TOUGH JOBS like pile driving, 900 c.f.m. "Power Vane" Rotaries have the stamina and reserve to keep the piling moving even in the toughest ground. 6 cylinder diesel drive. Capacity 900 c.f.m. at 100 psi.

Chicago Pneumatic

AIR COMPRESSORS • PNEUMATIC TOOLS • ROCK DRILLS • DIESEL ENGINES • ELECTRIC TOOLS • BLAST HOLE DRILLS • PUMPS • AIR BLAST BITS

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Building . . . Union Carbide, 270 Park Ave., N. Y. C.
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Curtain Walls . . . General Bronze Corp.
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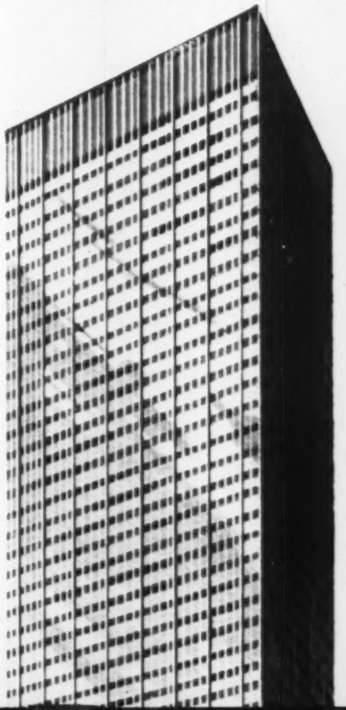
11 Acres of Curtain Walls made weathertight with the help of

"ADHERENTLY DIFFERENT SEALANT"

Again—sealants based on THIOKOL Liquid Polymer meet the highest standards of architectural design



Many joints in this towering new landmark are being sealed with the help of material based on polysulfide rubber. This special kind of sealant—the "adherently different sealant"—is specified for over 80% of all curtain wall structures.

Its unique bonding action—adhering to all types of structural materials in any combination . . . its elastomeric nature, giving with the stress of thermal change . . . its sympathetic quality, meeting the variations in expansion and contraction of the materials it joins without breaking away . . . its extreme length of life . . . these characteristics inherent only in THIOKOL polysulfide type sealant make it basic for curtain wall design. For complete data, write THIOKOL at address below.

Timeless, dignified, substantial, the Union Carbide building features a black stainless steel and glass "skin." Starter panels, mullions and window frames are sealed against weather with the help of THIOKOL polysulfide base sealant.

Thiokol®

CHEMICAL CORPORATION

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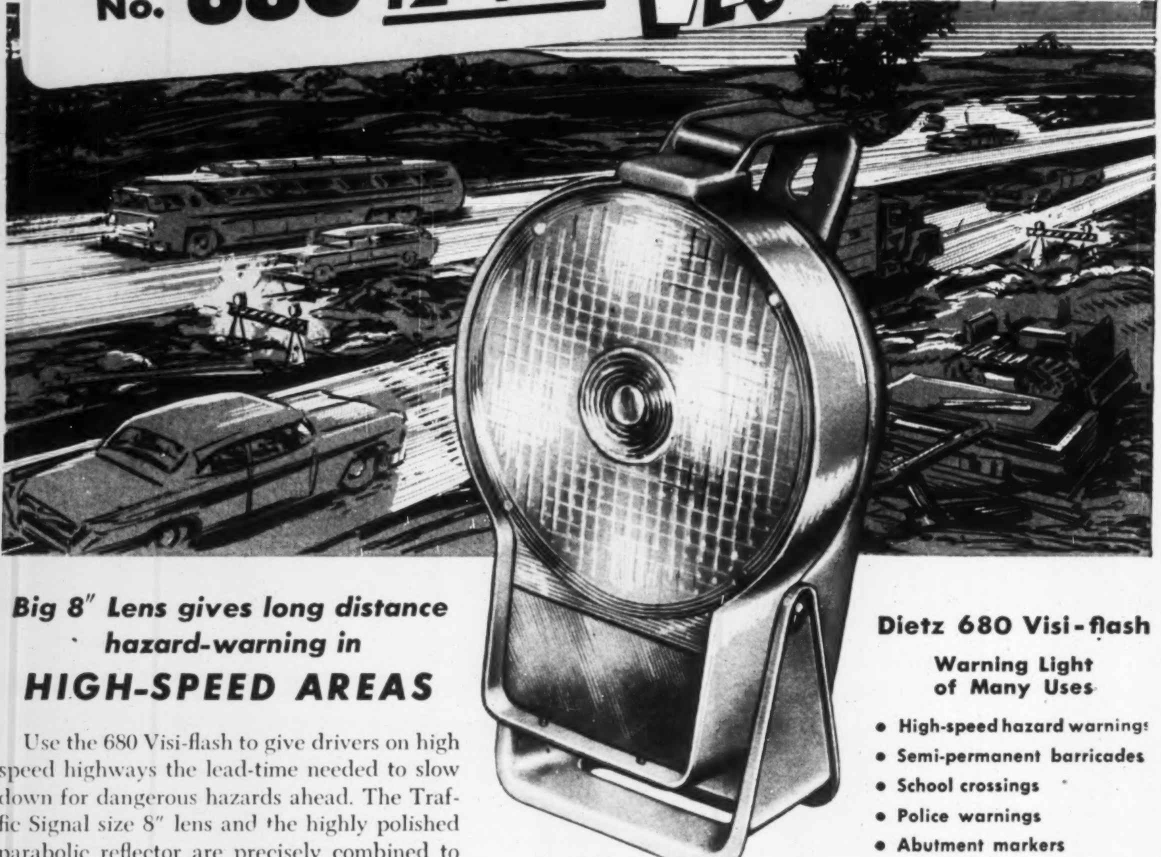
Now! An Official Size Portable Warning Light . . .

No. 680 12-Volt

DIETZ Visi-flash

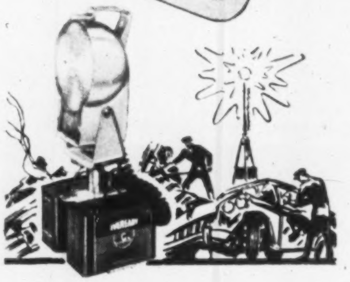


Big 8″ Lens gives long distance hazard-warning in

HIGH-SPEED AREAS

Use the 680 Visi-flash to give drivers on high speed highways the lead-time needed to slow down for dangerous hazards ahead. The Traffic Signal size 8″ lens and the highly polished parabolic reflector are precisely combined to uniformly beam hazard warnings over the longer distances and areas necessary to slow high speed traffic.

Powered by two 6 volt batteries, the fully transistorized 680 has no tubes to fracture, jar loose, or burn out. The entire unit is proof against weather, shock, rough treatment. In the standard circuit, batteries deliver dependable performance for *650 hours!*



Dietz 680 Visi-flash

Warning Light of Many Uses

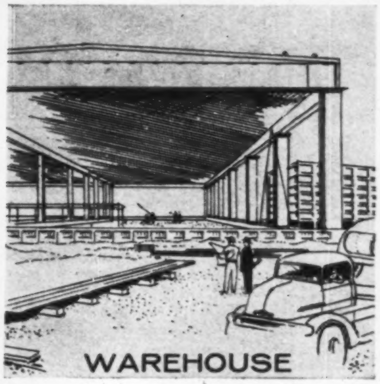
- High-speed hazard warnings
- Semi-permanent barricades
- School crossings
- Police warnings
- Abutment markers
- Overpass markers
- River bridge markers
- Rural traffic islands

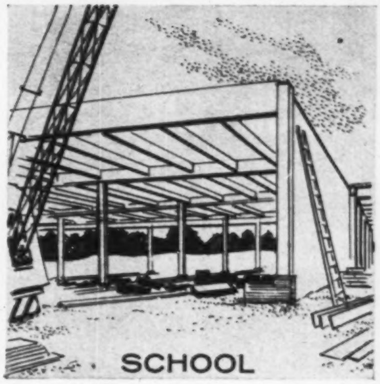
Ask your Certified Dietz Distributor in the U.S.A. or Canada for complete information. Or write for full line catalog: R. E. Dietz Co., 114 Leavenworth Avenue, Syracuse 1, New York.

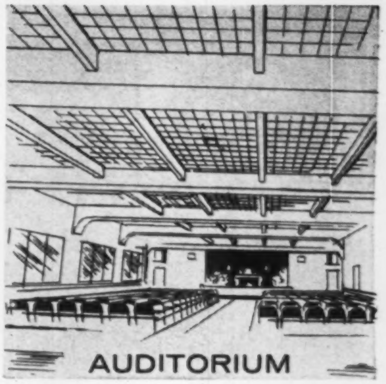
New 685 Visi-flash EMERGENCY LIGHT

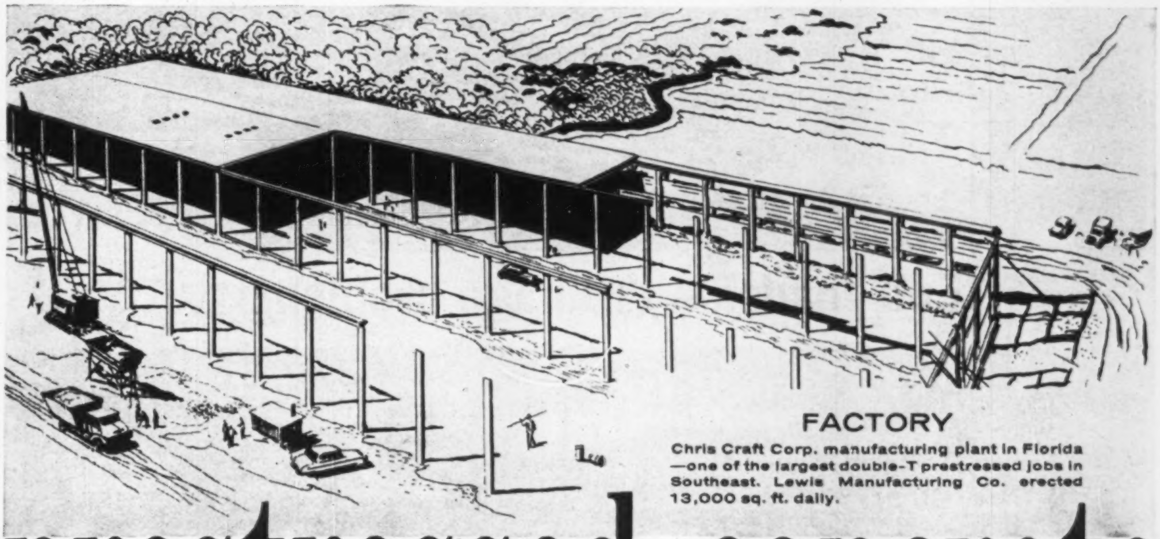
The 685 Visi-flash is especially designed for all kinds of warning lighting in emergencies, e.g., fires, roadblocks, work areas, maintenance or temporary hazardous road conditions in bad weather. Featuring a big 8″ lens, it is powered by two 9 volt hotshot batteries — can be mounted on tripod up to 8 ft. high (available on order).

Go DIETZ and you go Safely









FACTORY

Chris Craft Corp. manufacturing plant in Florida—one of the largest double-T prestressed jobs in Southeast. Lewis Manufacturing Co. erected 13,000 sq. ft. daily.

prestressed concrete

BETTER FOR EVERY BUILDING JOB . . . BEST WHEN YOU USE A FREYSSINET AFFILIATE

Experience and imagination are the "plus" factors Freyssinet Affiliates use to meet today's great challenge of low-cost fabrication. You get *all* the advantages of prestressed concrete for *any* structure through the worldwide Freyssinet network of specialists. This means maximum design economy and speed of construction through precision fabrication. Factory production methods allow components to be carefully tested and stored . . . on-the-job costs are reduced . . . and you get "on schedule" delivery and quick installation.

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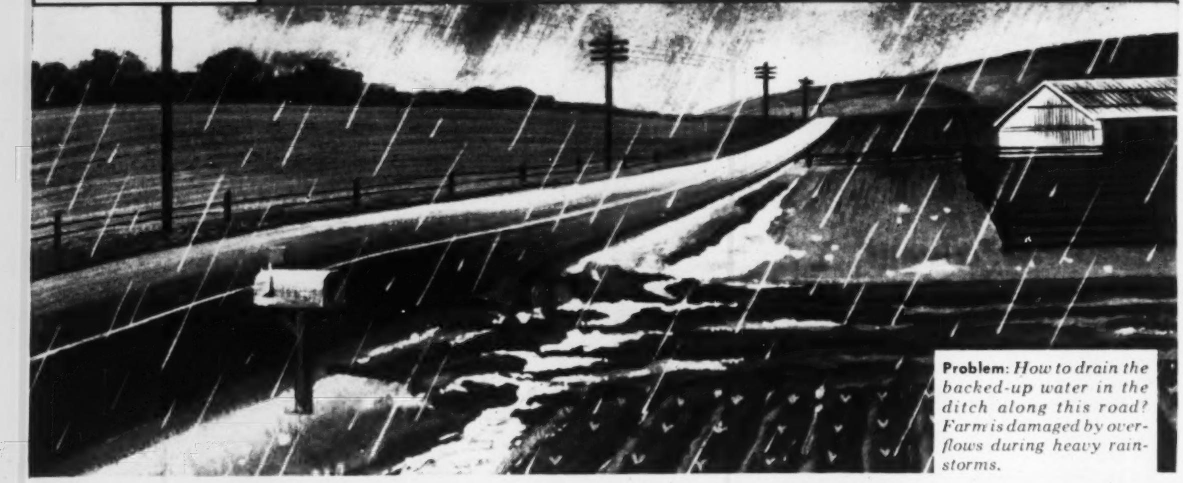
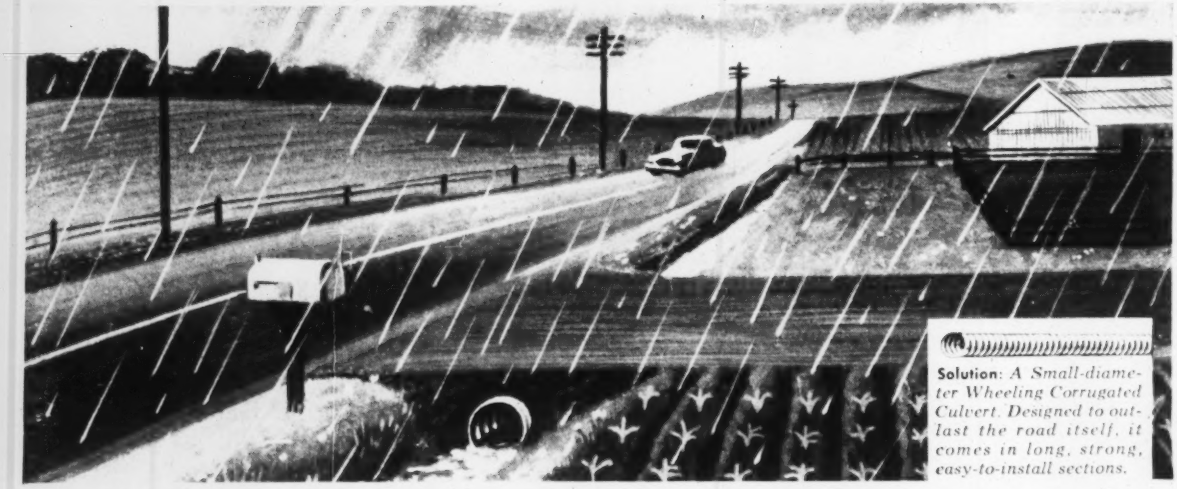
CIRCLE 9 READER SERVICE CARD

METAL CULVERT PIPE BY WHEELING



Problem: *How to drain the backed-up water in the ditch along this road? Farm is damaged by overflows during heavy rainstorms.*

End roadside drainage problems...



Solution: *A Small-diameter Wheeling Corrugated Culvert. Designed to outlast the road itself, it comes in long, strong, easy-to-install sections.*

with Wheeling Metal Culvert Pipe!

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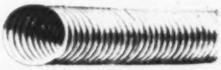
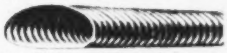
Wheeling Metal Culvert Pipe or Pipe Arch, in copper-bearing steel or copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters.

Write or call your nearest Wheeling warehouse, culvert plant, or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.



Large-diameter Wheeling Pipe—easily controls normal flow of fast-moving streams.



Wheeling Pipe Arch—a wide, comparatively flat-bottom type of corrugated metal pipe for use where headroom is limited.

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CIRCLE 10 READER SERVICE CARD

Reader Comment

Should Engineering Teachers Practice?

Sir—Your news item, "Too Much Homework" (ENR Aug. 6, p. 27) reported that consulting work on the part of state college faculty members in South Dakota is being investigated as unprofessional and unethical. This is in my estimation a little shortsighted. It is equivalent to a request that the engineering profession be satisfied with graduates who had never come under the influence of practicing engineers.

I wonder if the objecting engineers would be satisfied by doctors who had graduated from a medical school in which the teachers were not allowed to practice medicine.

We usually find in the engineering schools that those teachers who have practiced or who still are practicing engineering are more realistic in their approach and have a greater appreciation of the problems facing the graduate than those who have never had such experience. And, whatever we do, let us not discourage teachers by denying them an opportunity to augment their meager salaries.

Walter J. Seeley
Dean
College of Engineering
Duke University
Durham, N. C.

►I can see no reason for condemning the practice of extra-curricular consulting work on the part of professors as "unethical" or "unprofessional" providing:

- That those engaging in consulting work are registered professional engineers.
- That the fees charged for this consulting work are commensurate with those established by the society of professional engineers.
- That the faculty members do their consulting work on their own time, using their own materials and equipment.
- That student help, when employed, is adequately compensated.
- That the faculty members do not use their positions to unduly influence clients to engage them as their consultant.
- That their extra-curricular activities do not interfere with teaching assignments.

Ronald A. Hoefle
Aurora, Ill.

►It was disturbing to read that the South Dakota consulting engineers' organization was against engineering faculty members working as consulting engineers. The entire engineering profession should concern itself with the propriety of this.

In the rat-race that we engineers find ourselves today—unreasonable deadlines, inadequate fees and other inequitable return and recognition of the value of engineering services by our clients as well as by ourselves—it would seem that the last thing we would want to do is lower standards of education of future engineers. But if our South Dakota associates have their way, that is just what must happen.

Many of us who are involved, by choice, in both engineering practice and teaching are concerned about current engineering educational trends that we believe are effectively taking the engineering out of engineering education. There is, today, a dire need for greater involvement of practicing engineers in the teaching of and development of engineering curricula—if the label of "ivory tower" is not to become a disastrously fitting term, applicable to our engineering colleges.

In view of the need for "feedback" in engineering education, the action of the South Dakota engineers seems most inappropriate and represents a philosophy that is damaging to the profession as a whole.

Shouldn't they and all engineers rather channel their efforts toward providing our engineering faculty members with means for constant involvement in the practice of engineering?

Has the South Dakota consulting engineer group spent similar effort in the needed areas of upgrading of engineering faculty salaries so that "need" would not be a collateral reason for faculty participation in engineering practice?

Seriously and respectfully this writer hopes that many engineers will use this incident as reason to take stock of the entire structure of their profession.

Milton Alpern
Consulting Engineer and Ass't.
Prof. of Civil Engineering
The Cooper Union
New York, N. Y.

We Don't Pad Costs!

Sir—Referring to your article "GAO Hits Handling of Road Program" (ENR July 16, p. 30), wherein the General Accounting Office, in commenting on fees paid to consultants, says "there is an incentive for consultants to prepare elaborate plans and specifications and design expensive structures to increase their fees," I wish to state that, as a licensed professional engineer, I take personal offense at this implication of unethical practices.

I can say that during my experience with the five consulting firms with which I have been associated, not once has work with a high construction cost been proposed for the purpose of increasing fees.

As a matter of fact, just the opposite frequently takes place. The consultant puts out extra effort, in the form of studies, to arrive at a less expensive design and in turn for this increased effort he receives a smaller fee since most fees are based on a percent of construction cost.

The average consultant, in my opinion, still follows rigidly the code of ethics of his profession.

Reece H. Wengenroth
Associate
Blauvelt Engineering Co.
Woodbury, N. J.

►I note the paragraph quoting or paraphrasing a finding of the General Accounting Office with respect to engineers' fees on highway work: "Fees paid in some states are too high, an adequate protection of public funds is not afforded".

I have before me a copy of what I am told is the complete text of the section headed "Fees of Consultant Engineers" in the report by the Comptroller General on the audit of the Bureau of Public Roads for the fiscal years 1957 and 1958, and I am unable to find therein any statement that fees are too high. The nearest approach to it that I can find is a comment with respect to a cost-plus-percentage type of engineering contract in use in the State of Kansas, to the effect that certain items of expense "Specifically included in the contract as direct cost *could* ordinarily be considered a part of the overhead".

It is true that the report states that "We believe that in some states certain *provisions* of these contracts are unreasonable and do not afford adequate protection of public funds"; but the burden of the Comptroller General's criticism is that percentage-of-construction-cost fees and engineering cost-plus-

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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. . . for use where flow is desired in one direction only and to the atmosphere; for example, a river levee installation. The area behind the levee would drain into the river only when the river was low and below the flap valve. A higher level of the river would seal the valve.

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Sizes: 4" through 24"

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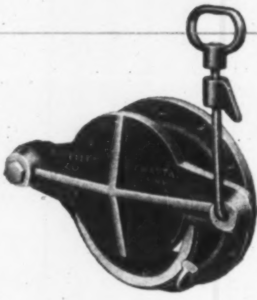

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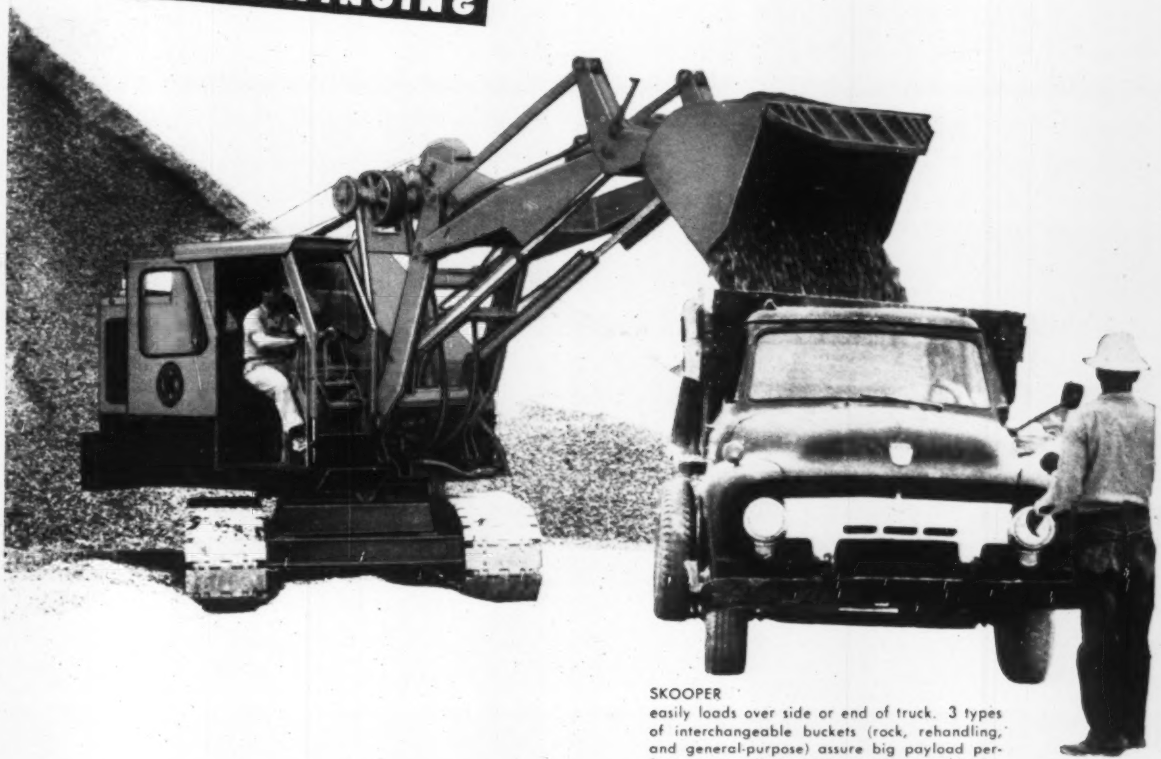

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percentage fees provide "Incentive for consultants to prepare elaborate plans and specifications and design expensive structures to increase their fees," in the one case, or "Incentive for the consultant to carelessly or deliberately increase direct cost" in the other. The report also states, "fees for consultants generally are based upon an established percentage of awarded contract prices or estimated construction costs".

It might be pointed out that the above two bases of compensation have been standard and perhaps universal in the engineering profession for many years; in fact it is an unfortunate paradox of the profession that under the widely used percentage-of-construction fees basis the more time and effort an engineer expends to produce maximum economy in design the less compensation he receives for it. However, I do not think that the integrity of the consulting engineering profession can be justly assailed because of this fact.

The absence of any statement in the report that fees of engineering consultants are in fact too high is, it seems to me, a necessary omission, for it would involve a reasonable standard for comparison presumably based upon the cost of performing the same work by other agencies. It is my impression that consulting engineers engaged in highway work would welcome such a comparison.

W. H. CORDDRY
President
Harrisburg, Pa.

No Fur For NSPE

SIR—Your editorial "The Future Could Be Now" (ENR June 25, p. 100) chides NSPE for reaffirming a decision not to come "under the EJC umbrella."

The situation seems to us to be similar to that of the hunter (whom we may allegorically call NSPE) who went into the forest and came upon a bear (whom we will think of as EJC).

Now, the bear was not as well armed as the hunter but his claws and his wit were both sharp.

"What are you looking for?" the bear asked the hunter.

"I'm trying to get myself a fur coat," said the hunter honestly.

"What a coincidence," said the bear. "I was just looking around for my breakfast. Why not come on around to my den where we can talk things over?"

So the hunter and the bear sat down together to work out an agreement.

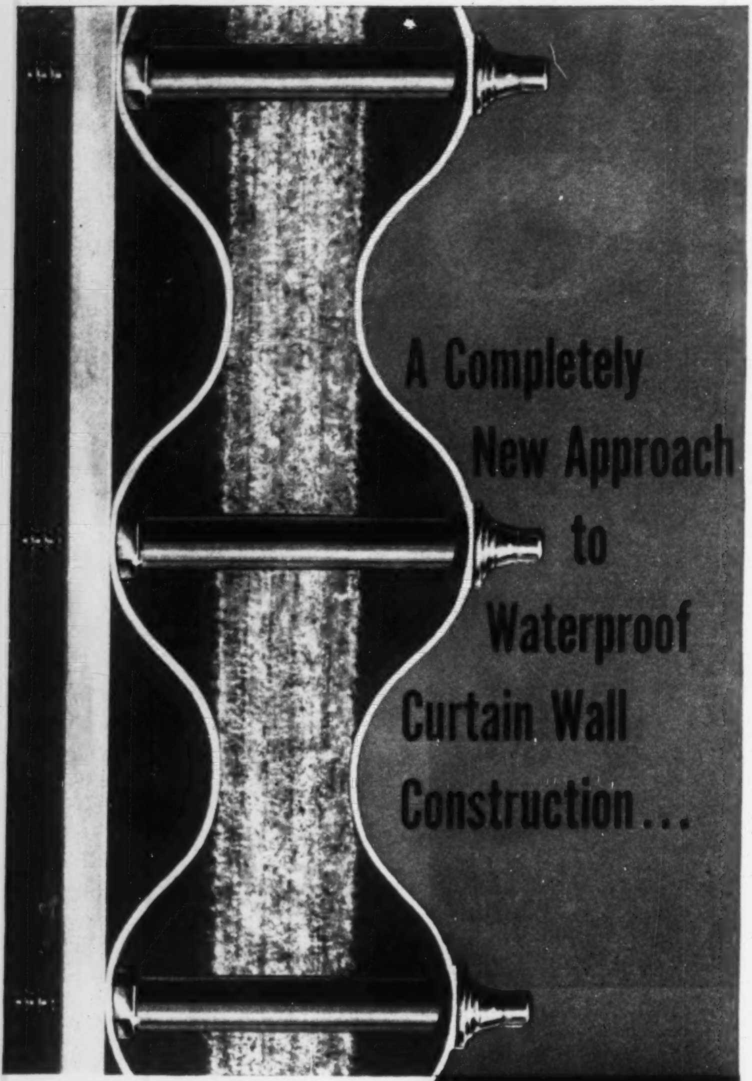
A little later the bear arose from the conference table—alone—and walked outside.

They had reached a compromise. The bear had secured his breakfast and the hunter had on his fur coat.

It would seem that NSPE is not yet ready for its fur coat.

ALBERT S. FRY
Knoxville, Tenn.

(Reader Comment continued p. 26)



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Tuff Tite tapping studs permit valley fastening on the inner skin, which greatly increases joint strength; and the conical neoprene washer provides an absolutely waterproof seal. See Sweet's Catalog or write for Bulletin TL-135. Townsend Company, P. O. Box 71-L, Ellwood City, Pa.

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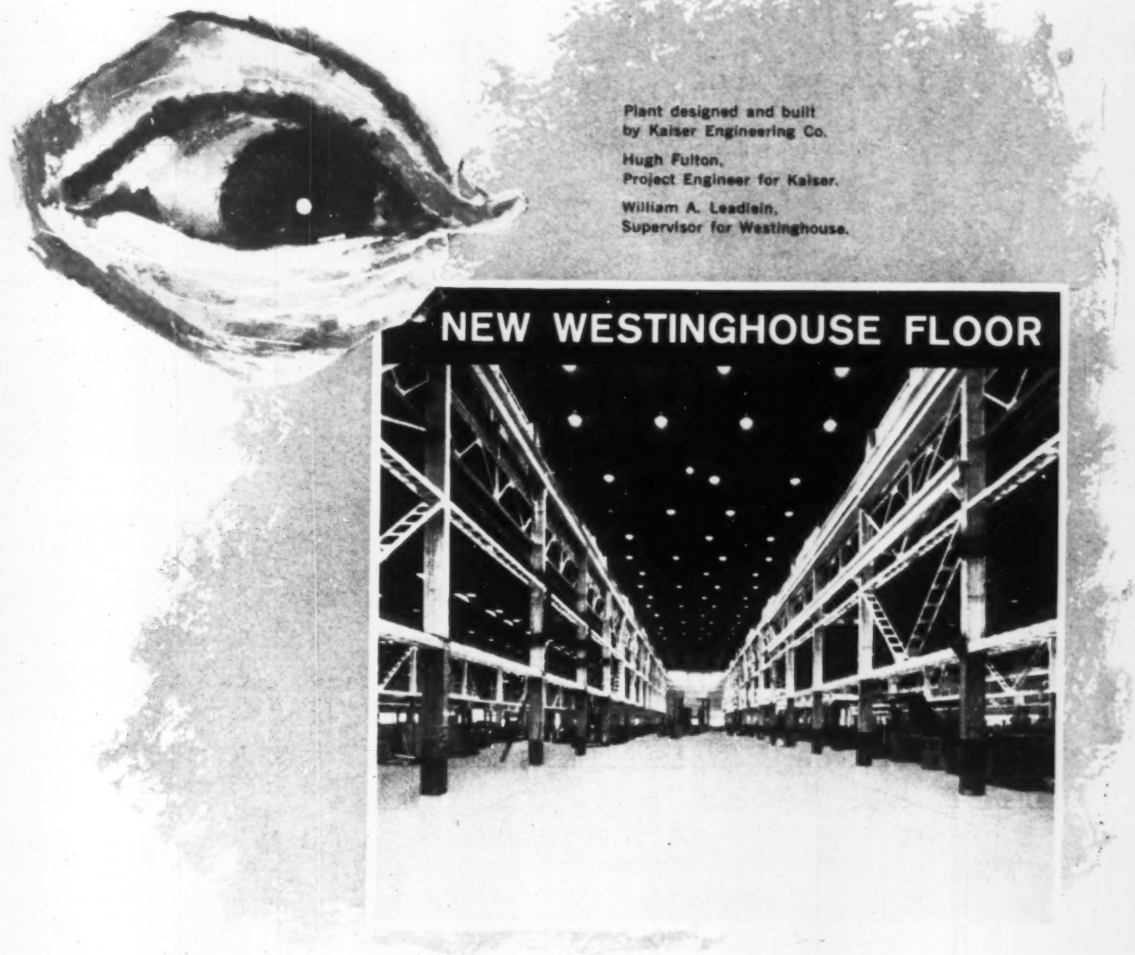
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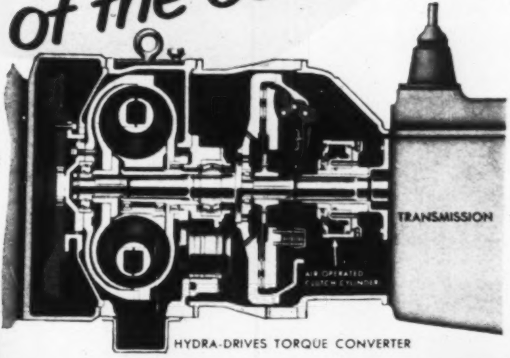

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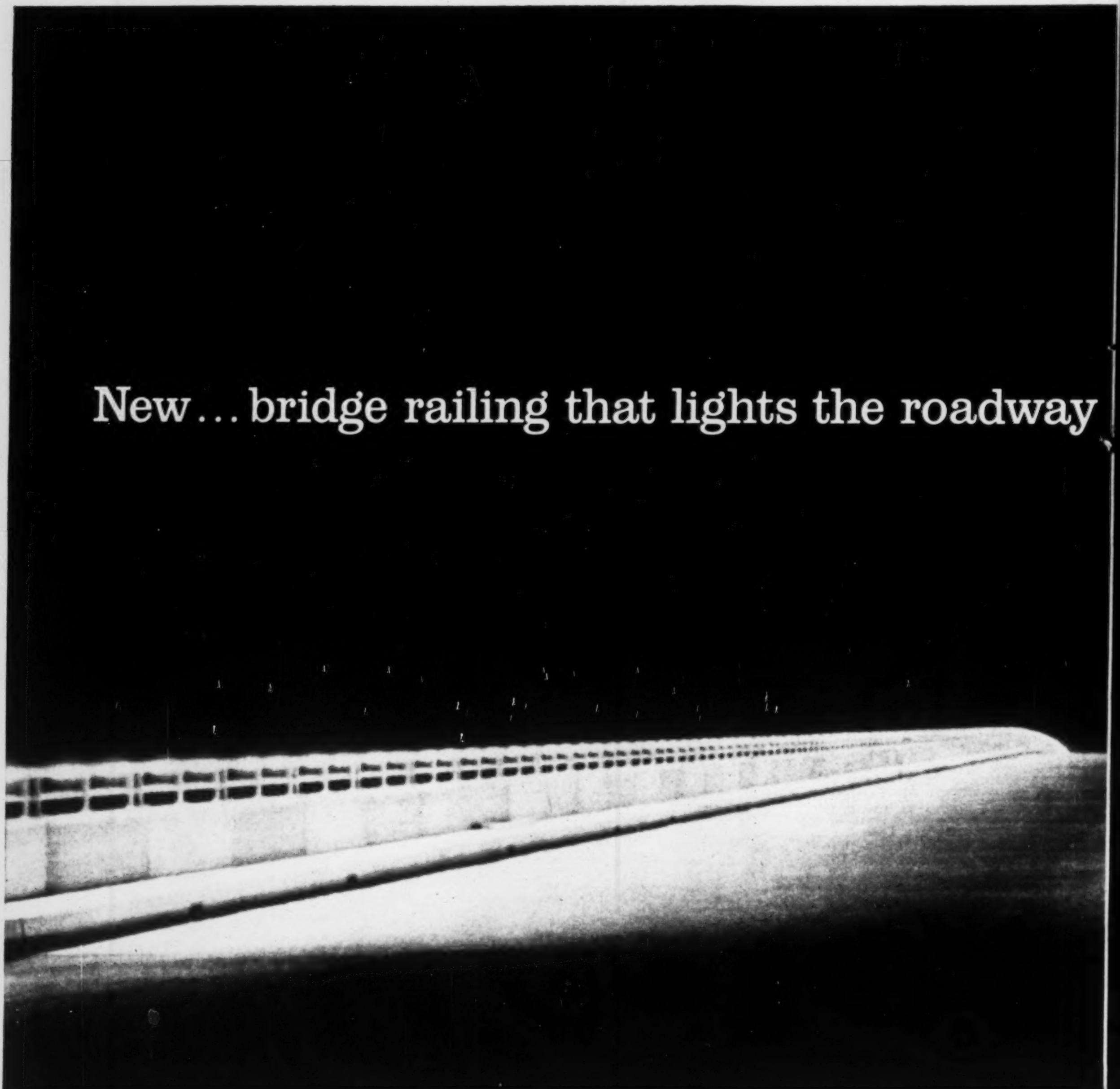
CIRCLE 17 READER SERVICE CARD

New... bridge railing that lights the roadway



Manahawkin (N. J.) Causeway Bridge is America's first to use the RAILIGHT concept. General Contractor: Conduit & Foundations, Phila., Pa.

Totally new concept in roadway lighting...General Electric luminaires built into Flynn aluminum bridge railing

RAILIGHT*, available from Michael Flynn, makes roadway lighting a function of bridge railing. It is based on a "pet idea" of Dwight R. G. Palmer, New Jersey State Highway Commissioner, that was developed jointly by General Electric and Flynn in the custom-made Manahawkin (N.J.) Causeway Bridge.

Now in standard units for all roadway installations, RAILIGHT simplifies installation, makes driving safer and maintenance easier. It gives almost perfect uniformity of illumination along the roadway . . . makes it possible to use a light source of low brightness, which eliminates glare. All light is reflected and directed across the roadway for improved visibility in fog, snow or rain. Only the roadway is lighted, for most efficient use of candle power supplied.

Maintenance for RAILIGHT is greatly simplified, because of the accessibility of the luminaires, and the quality of the Flynn bridge railing. Non-rusting aluminum, it never needs painting. It's so tough and durable, nothing short of an accident can make replacement necessary. What's more, two men, with wrenches as their principal tools, can install lightweight Flynn aluminum. No overmanned crews, no lift trucks, no cranes are needed.

Write to Michael Flynn Manufacturing Company's Main Office for additional information on RAILIGHT

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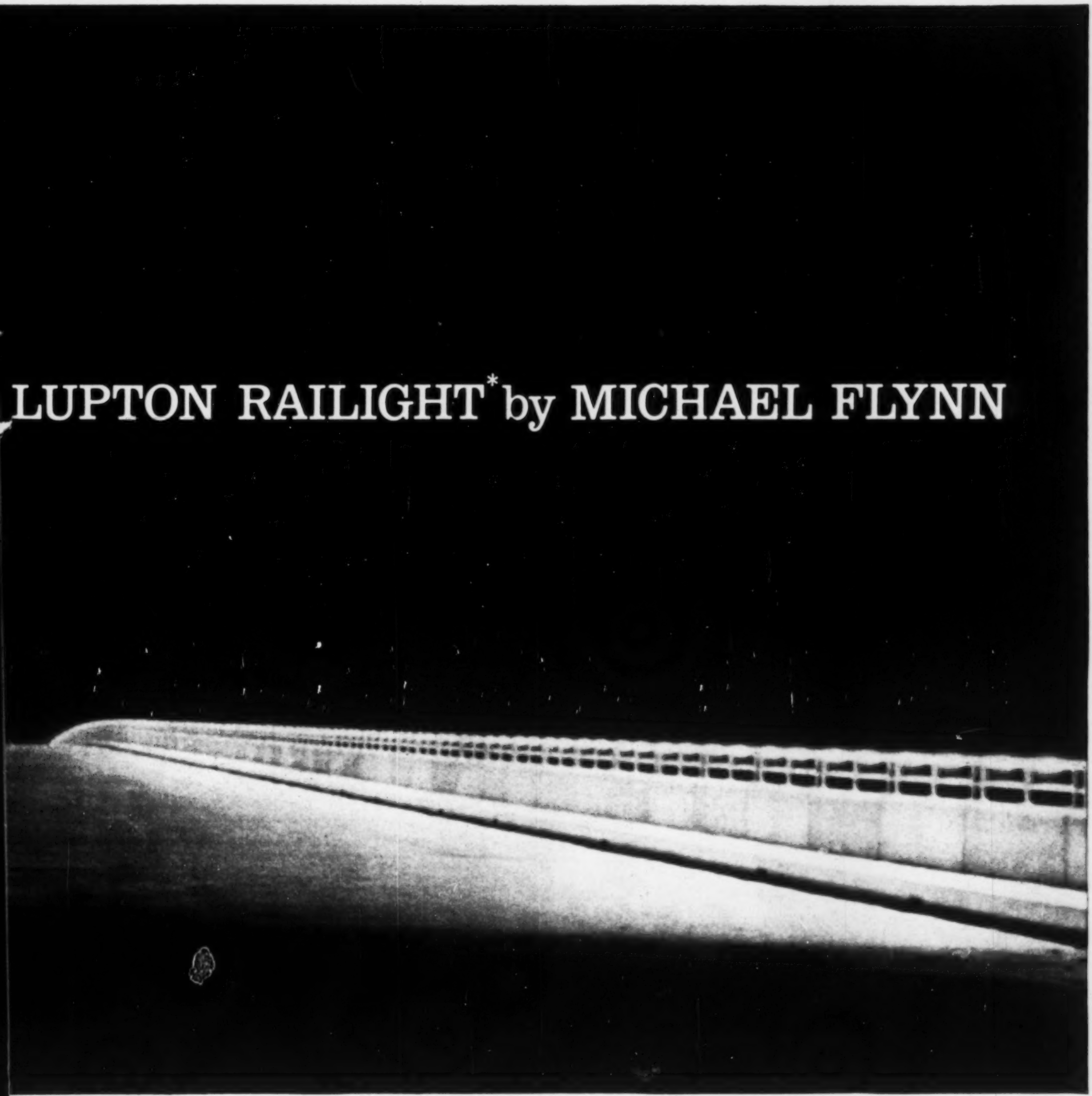

Steel & Railing erected by Cornell & Co., Inc., Woodbury, N. J. Lighting: General Electric.

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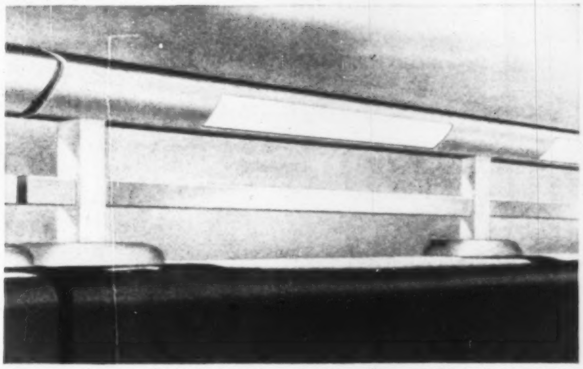

Closeup of RAILIGHT installation showing General Electric luminaire recessed in cut-out section of Flynn aluminum bridge railing. You enjoy wide latitude in center panel design.

CIRCLE 19 READER SERVICE CARD

UNIT takes a big bite!

Swings and Dumps FAST

Operator can SEE what he's doing at all times!

• Here is one of many contractors who prefer the UNIT 513C Challenger for handling bulk material. The pictures show the machine removing and loading used carbide slack from the pit of a large chemical plant. Equipped with $\frac{1}{2}$ yard clamshell bucket, the 513C takes a big bite, swings and dumps fast. Output averages about 30 yards per hour. Hydraulic clutches, and easy-to-reach levers, simplify the machine operation. And the safety-promoting FULL VISION CAB enables the operator to SEE what he is doing at all times. Get all the facts. Write for Bulletin.

A8-5025

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CIRCLE 20 READER SERVICE CARD

FRANKI FOUNDATIONS

at World's Most Modern Bakery for Biscuits and Crackers

$15 million plant of National Biscuit Company on 40-acre site at Fair Lawn, N. J., 12 miles from George Washington Bridge.

GENERAL CONTRACTOR: Walter Kidde Constructors, Inc., New York, N. Y.

FOUNDATION CONTRACTOR: Franki Foundation Company, New York, N. Y.

164-Foot High Tower Section for Raw Materials Storage and also 2-Story Laboratory Built on Franki Displacement Caissons Bearing in Granular Subsoil.

This newest of 10 Nabisco bakeries and a major unit in a $180 million expansion and modernization program was designed and its construction supervised by the Company's own engineering department.

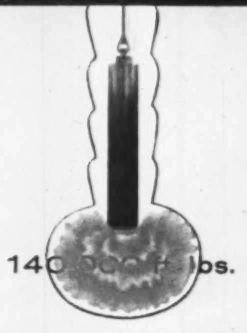
When borings for the tower section at the north end of the plant showed granular subsoil, Nabisco engineers recognized that displacement caissons with expanded base footings would provide a solid and most economical foundation. The tower is primarily for storage of 75 carloads of raw materials with mixing departments in the lower area.

After Franki engineers completed additional soil tests, two rigs installed 407 Franki Displacement Caissons at depths averaging 20 feet below grade, at a rate of better than 6 per day per rig during 36 driving days of cold December and January weather. Groups of caissons carry column loads as high as 940 tons.

Later, Franki engineers were called in again, this time for the foundations for an adjoining two-story Research and Development Laboratory at the south end of the four-block long bakery. A single rig installed 130 Franki Displacement Caissons in 20 driving days at average driven depths of 21 feet.

These two Nabisco installations, like other Franki work, were quoted on a lump sum basis without qualification or payment for excess footage. All work was guaranteed.

Ask for Literature describing Franki Methods and Typical Installations


140,000 ft. lbs.

Advantages of Franki Methods

A Franki Displacement Caisson, with its surrounding compacted earth mass, exploits the maximum bearing capacity of the soil.

Every Franki pressure-injected-type footing of "dry"* concrete is "forged" with 140,000 foot-pound blows of a falling ram, a force many times greater than the blow of a steam or pneumatic hammer.

As a result, the advantages are:

1. **High unit load capacity due to expanded base made in granular soil.**
2. **Economy because fewer Franki caissons of shorter length are required.**
3. **Volume of reinforced concrete caps is reduced to a minimum with corresponding savings in cap excavation, sheeting, reinforcing, forms and backfill.**
4. **Concreting of shaft can be made at any cutoff elevation below grade. Installation can be made in advance of general excavation with resulting saving in sheeting, bracing and maintenance. Depending on water table elevation, economies in pumping costs may also result.**

***"Dry" concrete is defined as zero slump concrete using approximately 3½ gallons of water per bag of cement.**

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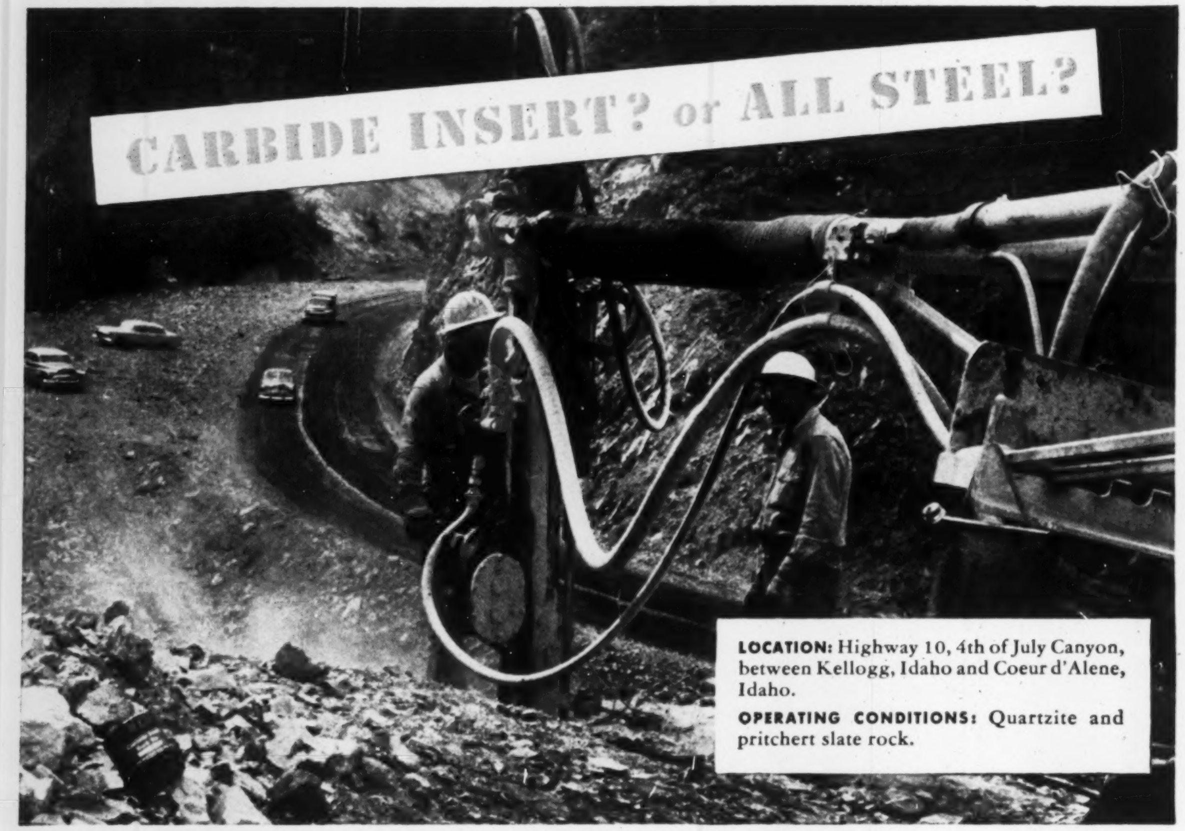
CIRCLE 21 READER SERVICE CARD

CARBIDE INSERT? or ALL STEEL?



LOCATION: Highway 10, 4th of July Canyon, between Kellogg, Idaho and Coeur d'Alene, Idaho.

OPERATING CONDITIONS: Quartzite and pritchert slate rock.

"We get more re-grinds per bit, lower cost with TIMKEN® carbide insert bits"

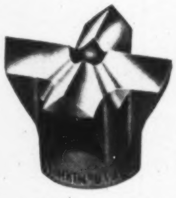
. . . Reports F. H. Slate and E. C. Hall Co.

IN constructing 7.2 miles of new four-lane highway in 4th of July Canyon between Kellogg, Idaho and Coeur d'Alene, Idaho, F. H. Slate and E. C. Hall Co. must drill through quartzite and pritchert slate rock. Using Timken® carbide insert bits, they average 12 to 14 re-grinds per bit, drill 20 to 100 feet of blast hole per pass. And with proper grinding, they use all of the carbide height with no fracturing of carbides when discarded. Bit cost per foot-of-hole stays at the minimum, production at the maximum.

Timken carbide insert bits are your best bet, too, for drilling in hard, abrasive ground. But in ordinary ground, you should use Timken all steel multi-use bits. They're interchangeable in the same thread series. Without changing drill steels, bits can be changed quickly and easily as the ground changes.

All Timken rock bits are made from our own electric furnace fine alloy steel. We're the only American removable bit manufacturer that makes its own steel. And for even longer life, Timken bits have a specially developed shoulder union that protects threads against drilling impacts.

To get all these advantages and get the right bit for your job, call or write Timken Rock Bit Engineering Service, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".



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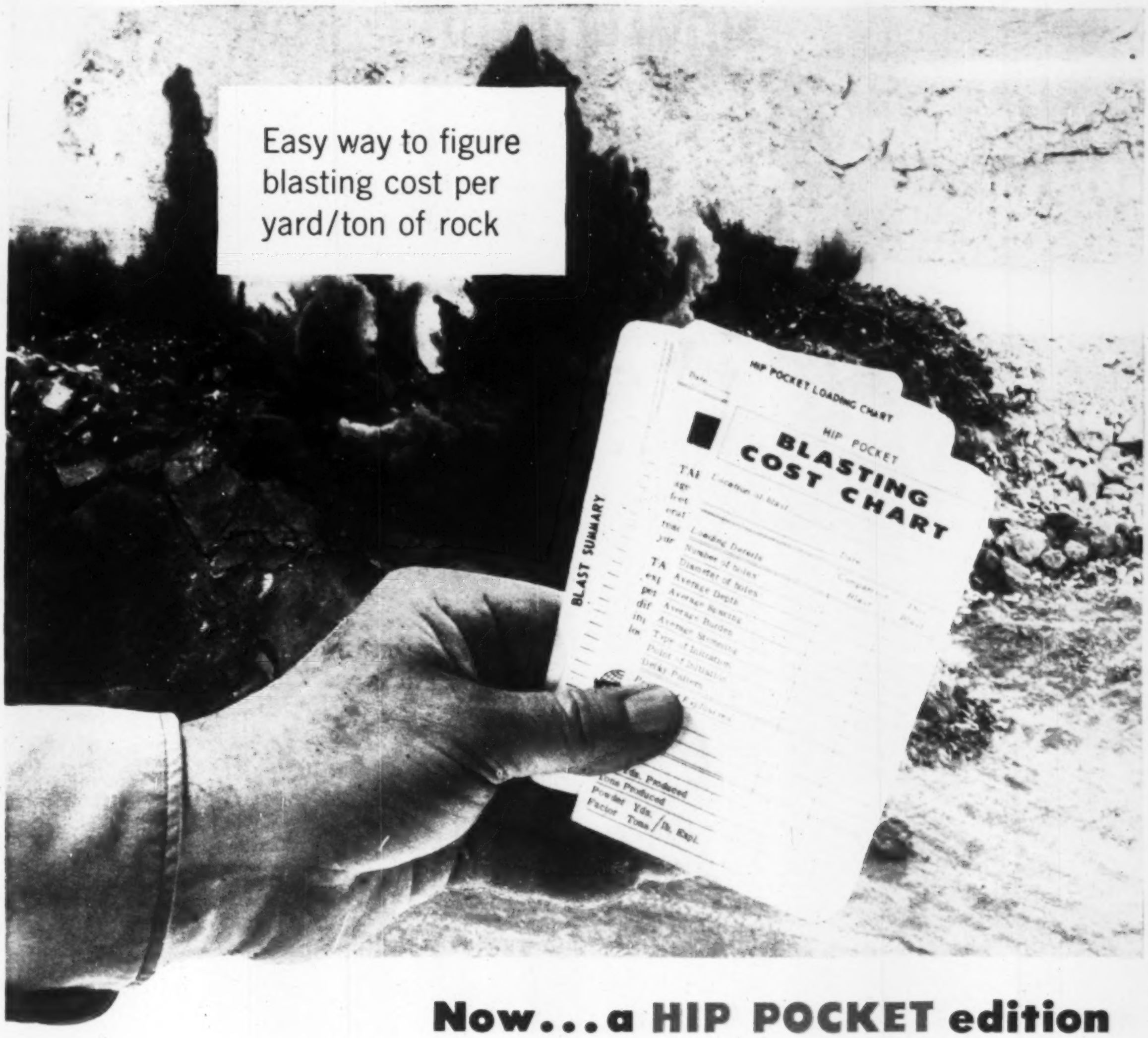
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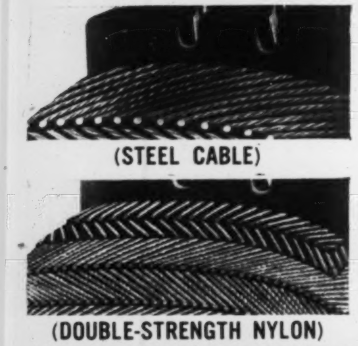

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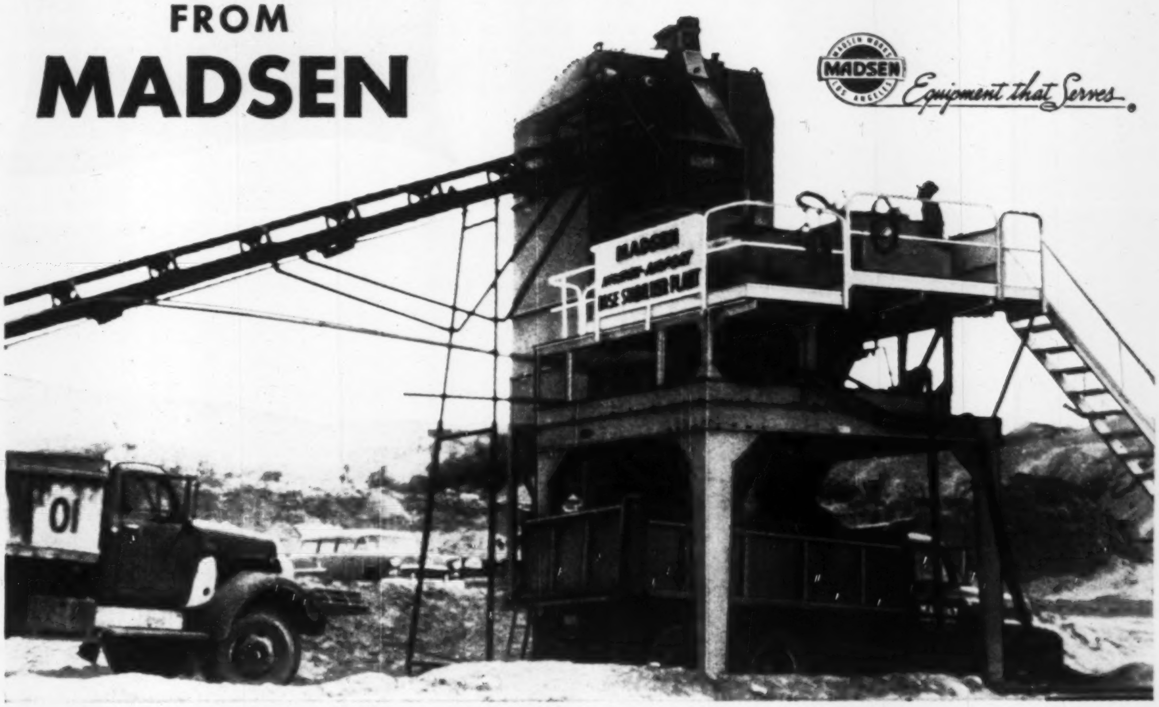

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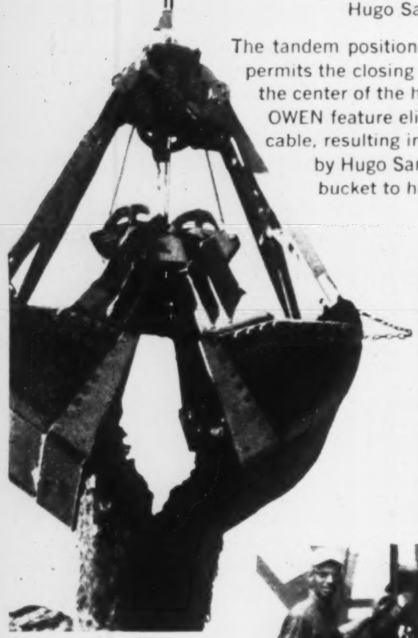

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The Head for Inspection

SIR—The following experiences emphasize the need for having the designer inspect construction, as pointed out in your editorial (ENR June 18, p. 312.)

A few years ago an owner engaged a prominent architect to design a hospital, and had the structural design prepared by a highly qualified consulting structural engineer. The building contained an auditorium over which there were long-span concrete girders carrying columns supporting upper floors. The second-floor construction was of 12 in. concrete joists formed by metal pans.

On a routine visit to the construction I noticed that the bent-up reinforcement in the girders did not carry up to the top of the girders, but had the horizontal run below the bottom of the 12 in. joists. I questioned this and was told by both the steel inspector and the project engineer that the reinforcement had been very carefully checked by them and conformed exactly to the drawings. I pointed out that the bars should have extended to the top of the girder.

We examined the shop drawings, which had been approved by the architect, but not the structural engineer. These drawings did indicate the steel bent horizontally below the bottom of the 12 in. joists. I insisted this was incorrect and phoned the structural engineer about it. He was appalled by the news and told me he had not been asked to check shop drawings. The reinforcement was replaced by properly detailed steel, and a possible mishap was fortunately avoided.

It happened that another similar hospital was being built by the same contractor from the same drawings, and the same error had been repeated at the second hospital. This was not picked up by the inspectors on the job. If the designer had inspected the construction he would of course have readily noticed the serious error.

Several years ago I designed a flat-slab concrete factory building. Because headroom at the elevator doors was limited I was compelled to use a doubly-reinforced beam with two rows of steel in the top. I carefully checked the shop drawings to be sure the steel was in two layers and called this to the attention of our office inspector. He in turn told me that he had cautioned the steel placer, the foreman, the building superintendent, and an inspector from an independent inspecting laboratory, and assured me that I had nothing to worry about. When they were placing the first floor I went to the job and found all the reinforcement in one layer, and the bars practically in contact, with no space for concrete to be placed or for the proper stresses to be developed. Fortunately I was there in time and the steel was reset.

SAUL UHR
Washington 8, D. C.

(Reader Comment continued p. 32)

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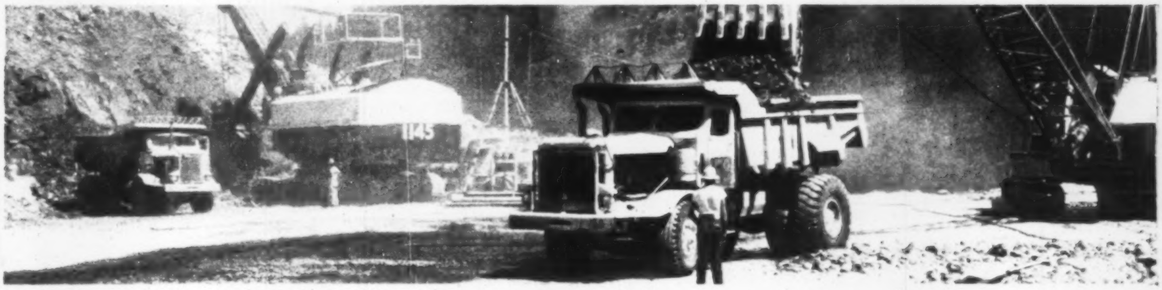

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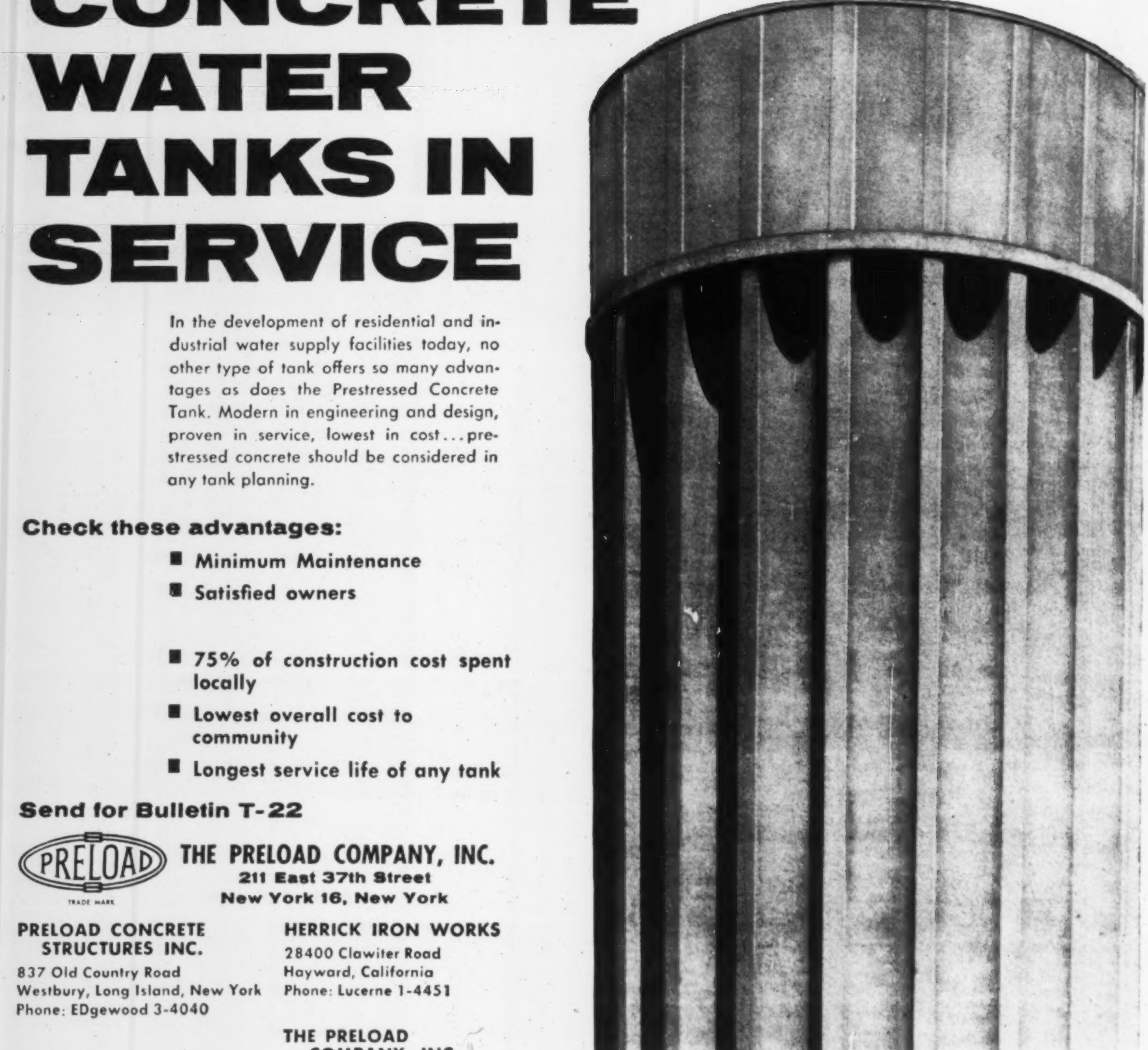

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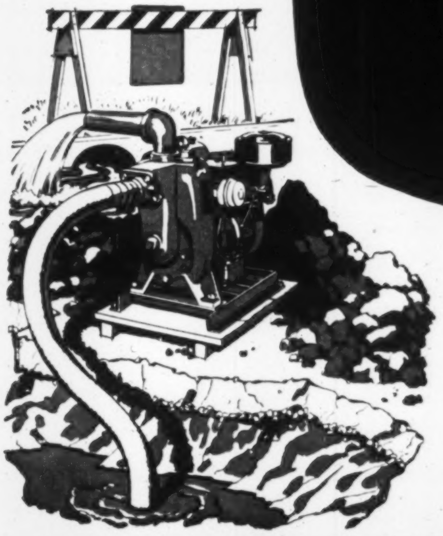

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Shelters: Yes, and Now

SIR—As a civil and nuclear engineer actively engaged in the field of protective construction, I seriously question the wisdom of your July 16 editorial, "Survival Shelters No Answer." Like so many articles on fallout or the effects of nuclear weapons, a little knowledge is certainly a dangerous thing. My own personal reaction to Governor Rockefeller's program was delight to see somebody doing something about a shelter program.

You state, "Obviously only those people outside the bomb destruction area would be alive to use a shelter." What do you mean by destruction area? This varies from complete vaporization to moderate damage. Even in the severe damage area, the probability of survival is not much less than the same damage by some other force, such as fire or storm. Why should everyone in the "destruction area" die merely because the source is a nuclear bomb?

Why can't the shelter occupants partake of food and drink that was not stored in the shelter? As long as the food and drink do not become mixed with fallout they should remain edible. Any food still in a container should be perfectly safe. Even food irradiated would be safe since most food is composed of oxygen, hydrogen, and carbon, three elements which do not become dangerously radioactive.

Water can be purified easily. Even animals killed by radiation would not be particularly harmful.

You state, "With our present scanty knowledge of how to protect against fallout, etc." This indicates that your writer hasn't read any technical literature on this subject since about 1947. Our knowledge of fallout and how to decontaminate areas from fallout is good enough to design fallout shelters and be sure that they will give the proper degree of protection.

Finally, your assumption that a civilian shelter program has little to recommend it as a deterrent to war is highly questionable. Without fallout protection, it is assumed that the U. S. would suffer 50 million to 80 million casualties, mostly from fallout radiation. Perhaps only 10 million would die as the results of direct blast, thermal or missile damage. The Soviets would think twice if they knew that a massive nuclear attack would only net ten million casualties instead of one third of our population. As a corollary, why are the Soviets and other European countries building shelters for their civilian population if there was no merit to it?

I don't profess to think that a shelter program is *the* answer any more than a massive retaliatory capability is the *whole* answer. A balance between both offense and defense seems more reasonable. Without a shelter system there may not be many of us around to enjoy—"a world in which everyone can live in peace and growing abundance."

J. C. LEDOUX
LCDR, (CEC), USN
Port Hueneme, Calif.

▶ *From an editorial in the Richmond (Va.)* TIMES DISPATCH

We are not impressed by recent tests of life in bomb shelters. The fact that a family can live in a shelter for two weeks or so is not a convincing argument for a massive shelter-building program. . . . Our own feeling, as of now, is that the Engineering News-Record is right when it says that shelters are not the answer.

▶ Your editorial "Survival Shelters No Answer" (ENR July 16, p. 166) represents a great disservice to the engineering profession as well as to our country. The editorial does not refute a single point of the brilliantly compiled Ruebhausen Committee Report's reasoning and recommendations. The argument that "just doing something is not necessarily better than doing nothing" will not deserve praises of the engineer's logic. Have you ever heard a doctor say that since cancer research has brought no results, we should stop spending money on it?

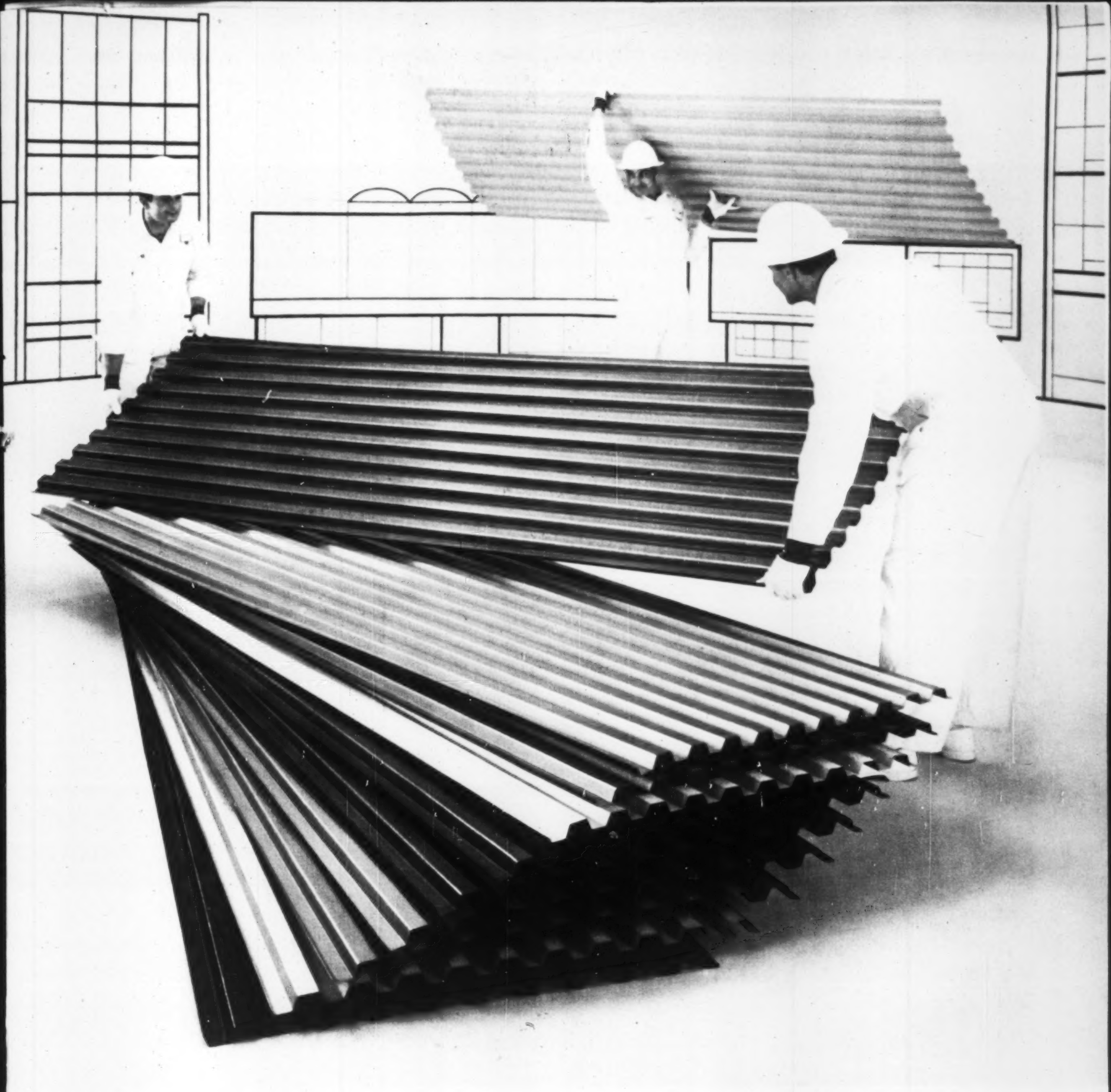
The "dismal record of civil defense to date" is largely the result of similar editorials. Any protection is better than no protection at all. The mood of the editorial gives the impression that there is only one solution: to lie down and to expect with resignation what the enemy wants to do to us. Unfortunately, this tune of the editorial may be interpreted as an introduction or appeal to surrender, and I am rather sure that the majority of the engineers does not agree to that.

Money spent for deterrent weapons without simultaneous protection of the civilian population is wasted money. To speak about "sound investment abroad" after Suez and after Cuba is either tantamount to innocence or extremely bad advice.

After the findings of the Gaither Study in 1957, the Rockefeller report in 1958 and the Rand Corporation's report on a Study of Non-Military Defense, every expert says that 20 million to 60 million Americans could be saved by suitable shelters. It would be utterly ironical if the engineers, who conceived this type of protection, will be the last ones who acknowledge the importance of the implementation.

REMIG A. PAPP
Flushing, N. Y.

Editor's Note: The engineering logic to which Mr. Papp refers might also suggest the inadvisability of building something that people won't pay for or be able or willing to use. The editors, who are as anxious as anyone to protect themselves and their families,



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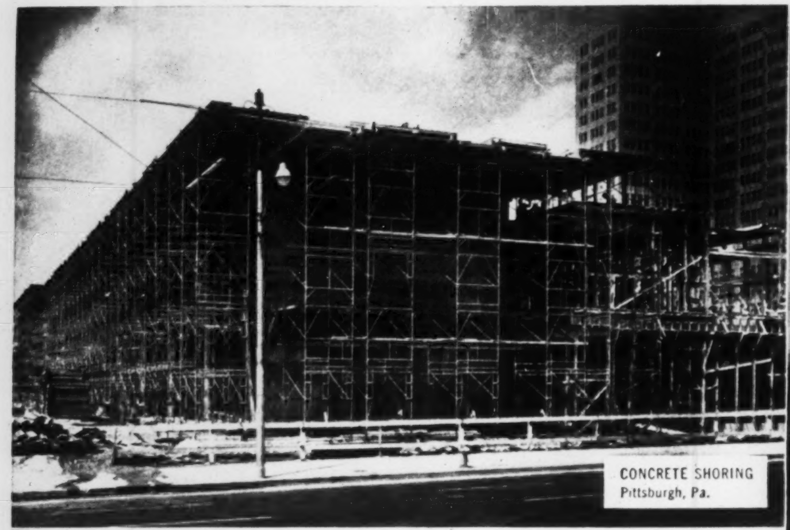

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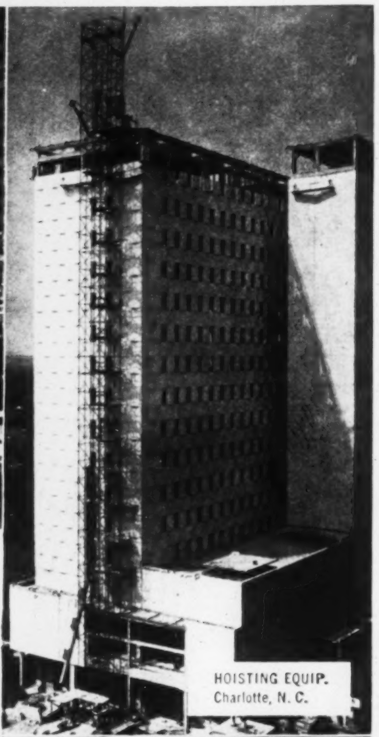

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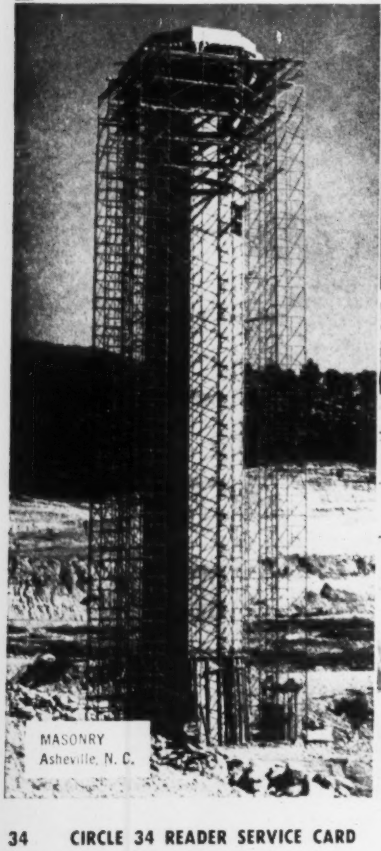

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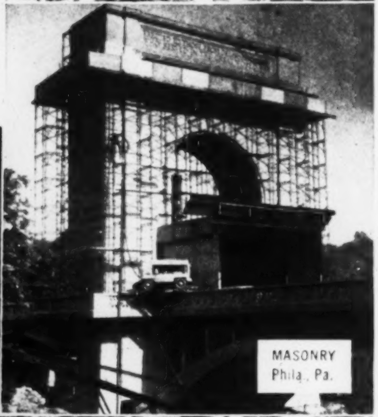

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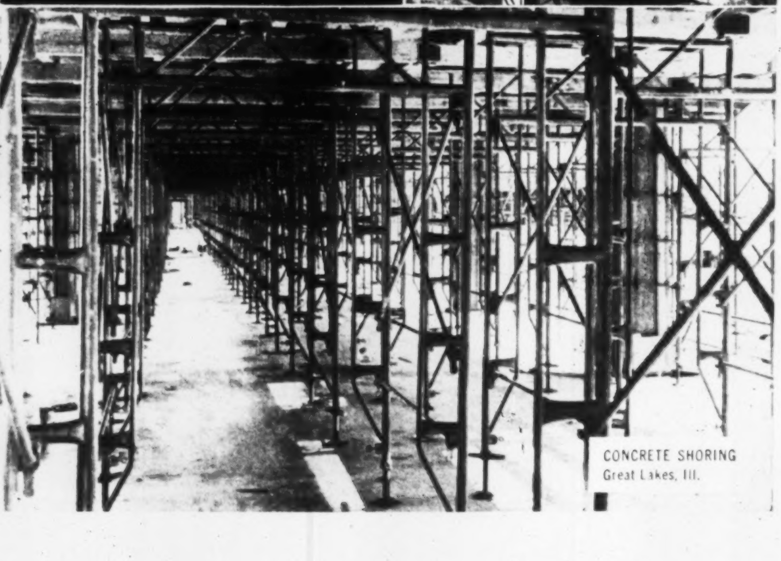

CONCRETE SHORING
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can only repeat what the editorial said: "With our present scanty knowledge of how to protect against fallout, our fear that people wouldn't or couldn't live in the shelters we build, and all of the other doubts and unknowns, a massive shelter program is a highly questionable form of defense." Mr. Papp says that just because cancer research has brought no results, we should not stop it. The simile is apt because as the editorial also said: "The aftermath of a nuclear bomb attack is so appalling to contemplate that it is imperative to continue to seek ways to combat it."

More on Mobile Lounges

SIR—We recently visited a number of airport owners and managers and also federal and state aviation agencies to discuss, the Chantilly Airport mobile lounges (ENR April 9, p. 23).

We were struck by the almost unanimous reaction aroused by your article and the related editorial on research. They ignored numerous studies, models and economic analyses made at many airports since 1954 that contained in detail all the basic elements of the mobile lounge system published on the Chantilly project.

What may be of interest is that in many of the older studies passenger comfort was not the prime motivation. Reduction in terminal cost (the Chantilly mobile units plus terminal were reported to cost the same as an equivalent larger terminal with long finger extensions), minimum ground time and movement of aircraft, and better utilization of irregular-shaped sites were among reasons given for the units.

Objections raised by airline executives included the possibility of dealing with another labor union, the increased danger of ground collisions between moving vehicles and aircraft, possible damage to the aircraft at the time of connection to the mobile lounge, and the fear that technological changes in aircraft design might make the mobile lounge obsolete too quickly.

Many of the studies also provided for mobile cargo or passenger pods carried aloft by short-range convertiplanes or STOL (short take-off and land) aircraft. These pods could be towed on the ground by truck tractor to downtown areas or to escalators at waiting long range jet aircraft. Passengers for the convertiplanes or STOL aircraft would be seated and waiting in additional pods for rapid pick-up and short range (to 250 miles) flight from the airport to suburban air stops or urban heliports. It is conceivable that this type of activity may yet prove feasible at some of the major airports where the present bottleneck is ground travel to and from the airport.

H. A. SINGER
Supervising Engineer
Seelye Stevenson Value & Knecht
New York, N. Y.

Some Mud Slurry History

SIR—Mr. Veder points out in his letter (ENR May 14, p. 8) that a mud slurry process has been used by his firm since 1950 in excavating trenches. He refers to the article (ENR Nov. 20, 1958, p. 51) which states that the process "is similar to one to be used in this country at the Wanapum Dam" (ENR Nov. 20, 1958, p. 51). It may be of interest to point out that the mud-slurry process was used many years ago in excavating deep foundation caissons in Chicago (ENR Oct. 12, 1939, p. 61).

In the W. J. Newman method, an augur boring machine sank a 4-ft. dia shaft 80 ft deep to rock bearing. This hole was constantly full of a thin clay slurry during the drilling. Two weeks after the 1939 ENR article was published, the City of Chicago authorized a number of caissons to be drilled and concreted without dewatering and without a lining in the shaft. Concreting was done by tremie.

Committees of engineers and architects inspected one of the test caissons on that job by means of an open well made alongside the cured caisson. They found that the concrete was of excellent quality, and from all appearances proper bearing on the rock foundation had been obtained.

F. A. RANDALL
Structural Engineer
Northbrook, Ill.

Editor's Note: Thanks to Mr. Randall for the reminder. On the Chicago job he mentions, clay for the slurry came from the shaft being sunk. A cutter head bolted to the end of the jet pipe chewed the clay into fine enough particles to create, with the jetted water, a suspension of the desired consistency. Mr. Randall was consulting engineer.

Erecting Sydney's Bridge

SIR—Your article about a new arch span to be erected near Liverpool (ENR July 2, p. 54) contains a reference to the method used in erecting the arch span at Sydney Harbor that I believe to be incorrect (ENR July 2, p. 54). Inasmuch as I had a small part in the office work on the erection operations, in the London office of Messrs. Dorman Long, I believe my memory is fairly reliable.

The halves of the arch span, during cantilever erection, were tied back by a very elaborate system of cables carried from the tops of the end posts to anchorages in the rock. I do not think that there was any connection between the arch span and the approach spans, as your article implies. To serve as an effective anchor for the great weight of the arch span during erection, the approach spans would have had to be much heavier.

W. G. MITCHELL
Chief Design Engineer
Canadian Bridge Division of Dominion
Steel & Coal Corp., Ltd.,
Walkerville, Ontario

For Your Calendar . . .

Porcelain Enamel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., Sept. 24-26. Write: Porcelain Enamel Institute, Associations Building, 1145 19th St., N. W., Washington, D. C.

American Welding Society, fall meeting, Sheraton-Cadillac Hotel, Detroit, Sept. 28-Oct. 1. Write: American Welding Society, 33 W. 39th St., New York.

Atomic Energy Commission, symposium on industrial uses of reactors, Commission Auditorium, Germantown, Md., Oct. 1. Write: Director, Division of Reactor Development, U. S. Atomic Energy Commission, Washington 25, D. C.

Sewage and Industrial Wastes Association, annual meeting, Statler Hilton Hotel, Dallas, Tex., Oct. 12-15. Write: Federation of Sewage and Industrial Wastes Associations, 4435 Wisconsin Ave., Washington 16, D. C.

National Safety Congress Construction Section, Hotels Conrad Hilton and Morrison, Chicago, Oct. 19-21. Write: Clement J. Luepke, Staff Representative, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Society for Experimental Stress Analysis, annual meeting, Pick Fort Shelby Hotel, Detroit, Mich., Oct. 21-23. Write: Society for Experimental Stress Analysis, P. O. Box 168, Cambridge 39, Mass.

Cast Bronze Bearing Institute, annual meeting, Bedford Springs Hotel, Bedford, Pa., Oct. 21. Write: Herbert F. Scobie, Non-Ferrous Founders' Society, 1604 Chicago Ave., Evanston, Ill.

Non-Ferrous Founders' Society, annual meeting, Bedford Springs Hotel, Bedford, Pa., Oct. 22-24. Write: Herbert F. Scobie, Non-Ferrous Founders' Society, 1604 Chicago Ave., Evanston, Ill.

Acoustical Society of America, session on cavitation, Cleveland, Ohio, Oct. 22-24. Write: John Karpovich, Physical Research Laboratory, Dow Chemical Co., Midland, Mich.

National Safety Congress Construction Section, Hotels Conrad Hilton and Morrison, Chicago, Oct. 19-21. Write: Clement J. Luepke, Staff Representative, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

American Public Health Association, annual meeting, Convention Hall, Atlantic City, N. J., Oct. 19-23. Write: American Public Health Association, 1790 Broadway, New York, New York.

American Society of Civil Engineers, annual convention, Hotel Statler, Washington, D. C., Oct. 19-23. Write: ASCE, Engineering Societies Building, 33 West 39th St., New York 18, New York.

Society for Experimental Stress Analysis, annual meeting, Pick Fort Shelby Hotel, Detroit, Mich., Oct. 21-23. Write: Society for experimental Stress Analysis, P. O. Box 168, Cambridge 39, Mass.

Cast Bronze Bearing Institute, annual meeting, Bedford Springs Hotel, Bedford, Pa., Oct. 21. Write: Herbert F. Scobie, Non-Ferrous Founders' Society, 1604 Chicago Ave., Evanston, Ill.

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Acoustical Society of America, session on cavitation, Cleveland, Ohio, Oct. 22-24. Write: John Karpovich, Physical Research Laboratory, Dow Chemical Co., Midland, Mich.

National Highway Conference for County Engineers and Officials, annual meeting, Leamington Hotel, Minneapolis, Minn., Oct. 26-28. Write: County and Local Roads Division, American Road Builders' Assn., World Center Bldg., Washington 6, D. C.

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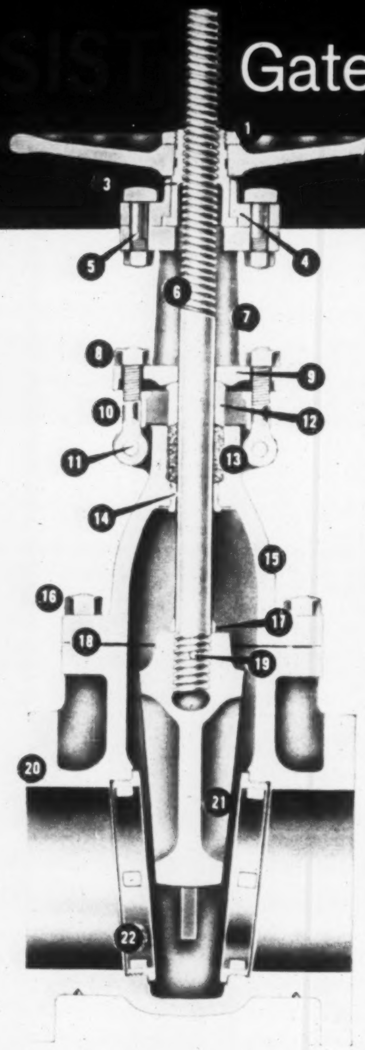

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14 TYPE 316 STAINLESS STEEL bonnet bushing
15 NI-RESIST CAST IRON, TYPE 2, bonnet
16 Steel bonnet bolts and nuts
17 TYPE 316 STAINLESS STEEL spindle ring
18 Asbestos gasket
19 TYPE 316 STAINLESS STEEL wedge pin
20 NI-RESIST CAST IRON, TYPE 2, through-port body
21 TYPE 316 STAINLESS STEEL solid I-beam wedge
22 TYPE 316 STAINLESS STEEL seat rings

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ENGINEERING NEWS-RECORD

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CONTENTS

Labor Cost Report and Outlook 72

What Does Labor Law Mean? 41
Chase Manhattan Bank Building Tops Out 43
Outlook: Tight Control Over Road Funds 43
New Craneway Goes Through Old One 44
Public Works: Congress Has Its Way, Less 2½% 45
Senate Settles Airport Sewer Battle 46
Slocum Wants Complete Control of Bhakra Dam 48
Housing Trimmed $1 Billion 48

FEATURES
Dock Job Fights Water on Two Fronts 50
Arena's Skew-Formed Dome Spans 270 Ft 56
Alternate Design Pays Off in Lower Costs 60
Biggest Aggregate Plant at Niagara Project 64
Prestressing Steel Trusses Cuts Costs 67

INTERNATIONAL
Mass Producing Prestressed Piles 135
Fallout Protection for West Germany 135
Dam to Control India's Jumna 136
Construction Pictures Around the World 144

FIELD AND OFFICE
Ten Construction Tricks You Might Use 146
Precast Panels Line a Canal 150

RESEARCH AND DEVELOPMENT
Beam-and-Slab Holds Up Easily 155

BUSINESS PROFILE
Tishman: An Old Firm With New Ideas 156

MEN AND JOBS
New Executives for Abbott, Merkt & Co. 163

NEW PRODUCTS
Crusher Handles 500 Tons per Hour 220
Block Press Squeezes Costs Too 222

INFORMATION SERVICE CENTER 253

BUSINESSS AND FINANCE
Six Construction Firms Sold 303
Construction Still Unhurt by Strike 304
Equipment Orders Climb Again 304
More Construction Business Due 306
Roadbuilder Payments Threatened 308

LABOR
Court Upsets Mountain-Pacific Case 309
Payroll Taxes: Universal, but Varied 310
AGC and Carpenters May End Alaska Strike ... 313

Reader Comment ... 11
Calendar 35
Washington Observer 39
Materials Prices 94
Unit Prices 107
Obituaries 172
Legal 175
Construction Reports . 255
Statistics, Indexes .. 301
Editorials 324

Back issues of Engineering News Record *are generally available for the previous six months. Semiannual indexes will be sent on request.* Engineering News Record *is also indexed in Industrial-Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

TUNNEL TROUBLE—A cave-in at Lebanon's Litani Valley power and irrigation project (ENR Nov. 21, 1957, p. 28) filled two miles of completed tunnel solidly with sand. A sudden flow of water at 35 cfs brought down the roof when workers advanced the heading out of a limestone formation into loosely cemented sandstone. The sandstone overburden is estimated to be 2,500 ft thick. The problem is to re-drive the tunnel without bringing in more sand.

TOLLS TO STAY—The lucrative Delaware Memorial Bridge will be controlled by a bi-state authority, under an agreement reached last week by New Jersey and Delaware. The bond-financed bridge—built and owned by Delaware—was scheduled to become toll-free in four years. Under the authority, tolls will continue and be used for maintenance and further construction.

CONSTRUCTION HIRING IS UP—Employment of contract construction workers increased by 82,000 in August, up for the sixth straight month to a 1959 high of 3.1 million. However, the August figure, while better than last year's, is still below the 1956 and 1957 August figures.

BANKS BACKED—California Governor Edmund G. Brown has scotched rumors he would replace engineer Harvey Banks, as director of the department of water resources. There were rumors he would elevate Ralph M. Brody, the deputy director, to the top job. Mr. Brody, an attorney, is the governor's personal advisor on water problems. Mr. Banks is a Republican holdover in the Democratic administration.

SPEED-UP AT BRATSK—The Bratsk hydro project on Siberia's Angara River—now rated at 4.5 million kw—will be finished in 1965, two years ahead of schedule, says Tass, the Soviet news agency. First turbine is to be installed in 1961. The big dam is now just getting off rock in its second phase behind a cofferdam.

INDIANS ATTACK JOHN DAY DAM—The Kah-Milt-Pah Indian Tribe will go to the U. S. Court of Appeals, San Francisco, with their suit to block construction of the John Day Dam on the Columbia River. The suit was dismissed by the U. S. District Court, Yakima, Wash. The tribe claims the dam will flood its fishing stations. Meanwhile, back at the dam, construction will proceed while the appeal is processed.

Want Information?

ENR's Information Service Center makes its second appearance in this issue (p. 253). We hope you use this new reader service—we serviced thousands of inquiries the last time. Be sure and give your complete address when you fill out the inquiry card.

modern patterns in concrete . . .

The functional look of the Wachovia Bank and Trust Company Office Building in Charlotte, North Carolina, is softened by the skilled use of concrete shapes interspersed among hundreds of gleaming windows. Almost infinite variations can be achieved in the architectural uses of concrete, a fact that accounts for its widespread popularity in modern building. Penn-Dixie cement played a vital part in the construction of the Wachovia Bank Building.

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Ready-Mix Supplier: Concrete Materials, Inc., Charlotte, N. C.

WASHINGTON OBSERVER

- Housing boom ending?
- New highway probes coming

- **Fears are rising in Washington that the housing boom may be topping off.** And the reason is not demand, but lack of credit. Housing is in a reasonably healthy state, and may continue so for some little time, the Washington reasoning goes, but unless there is a break in mortgage availability, builders will be decreasing their plans.

Government agencies are reflecting the Administration's tight money policy.

For an indicator on availability of mortgage money, take a look at Fannie Mae, the volume of mortgages offered, the price being paid and what Fannie Mae is paying on the money it raises to buy mortgages.

Last week Fannie Mae gave investors an unprecedented 5¼% on $150 million of two-year debentures. Only five months ago the agency was able to sell a 10-year issue to yield 4.47%.

This week Fannie Mae is paying less for the mortgages it buys, the third price cut since June. The new price list is 1.5 points below the previous list, which was set only four weeks earlier. The progressive price cuts are an attempt by officials to discourage mortgage holders from selling more and more FHA and VA mortgages to the government.

This week, for instance, a lender will receive only $97 to $95 for each $100 worth of debt carrying a 5¼% mortgage, and only $93 to $91 for 4¾% paper. Those who use this Fannie Mae secondary market still pay a 0.5% fee to Fannie Mae and must put 2% of their proceeds into Fannie Mae common stock.

But mortgage holders still are selling heavily to Fannie Mae in order to get funds to lend again. The price cut in June came when sales to Fannie Mae passed $20 million a week. But despite the lesser cash return, mortgage holders have kept boosting their offerings to Fannie Mae. Before this latest price reduction, offerings were approaching $30 million a week.

—

- **New highway "investigations" have been created by this year's fuss over financing the multibillion construction program.** Both the House Ways and Means Committee (the tax writing group) and the Public Works Committee (which regulates all other aspects) have named special subcommittees to worry about financial problems.

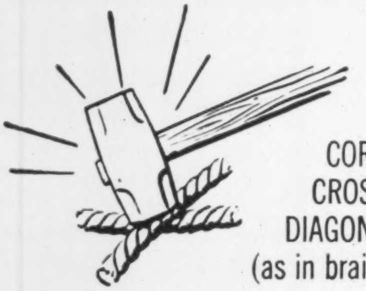
Actually, no one is sure just how far the committees will go. But Congressmen felt they couldn't hit the voters with a new tax increase without some show of holding costs down or otherwise making the financing less painful. Also, they felt the pressure of the report from the General Accounting Office, which was critical of the way the Bureau of Public Roads is handling the financing.

Congressman John Blatnik's public works group says it will study the issue of asphalt vs concrete, reports of over-design, and other construction aspects that might offer hope of some cost-cutting. But privately, officials don't expect anything really significant on this issue until the AASHO road test results are out in 1961.

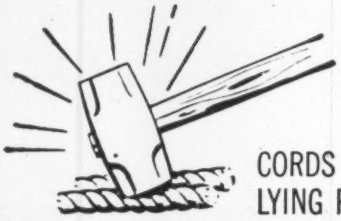
Federal and staff highway officials predict the committees will mean one thing for sure—an even heavier barrage of questions and hearings for Congress.

ROYAL CORD AIR HOSE

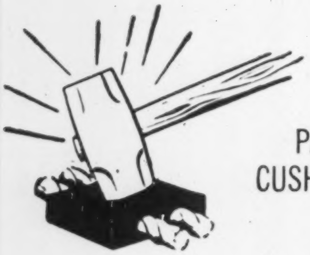
WHICH HOSE CONSTRUCTION CAN TAKE THE BEATING?



CORDS
CROSSED
DIAGONALLY?
(as in braided hose)



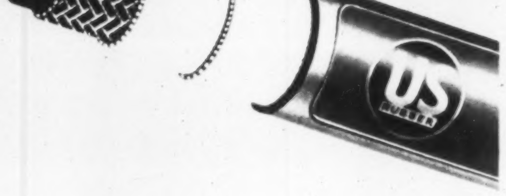
CORDS
LYING PARALLEL?



OR

PARALLEL CORDS
CUSHIONED IN RUBBER

as in U. S. Royal Cord Air Hose?



Yes, the exclusive "U. S." development—parallel cords cushioned in rubber can take and *do* take the *most* pounding. Observe how the cords run parallel in each of the two pressure-resisting plies; there is no crossing as in conventional braided hose. Each ply is separated by a layer of rubber—each cord is cushioned in rubber. This means there can be no friction created between cords, and therefore no chance of any shearing within the carcass.*

A hose with spiral plies is *always* stronger, because more strands can be used throughout the entire hose length than can be used in other constructions. *U. S. Royal Cord Air Hose has the same construction as that of a tire.* This is the exclusive quality you find under its cover.

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ENGINEERING
NEWS-RECORD

What Does the Labor Law Mean?

- **Unions are likely to become more militant because of the loss of traditional organizing practices and the reporting requirements.**
- **Taft-Hartley changes are extensive. How significant they are depends on how courts decide the legal battles sure to come.**

The "Labor-Management Reporting and Disclosure Act of 1959," which President Eisenhower signed into law this week, will become effective in 60 days. But it will take years of costly study and litigation to find out what the full impact and meaning of the new labor law really is.

The biggest single effect of the bill is that unions will have to pay more money to lawyers, says AFL-CIO President George Meany. And the long, detailed, often complex and overlapping provisions suggest that employers also face the same prospect.

Differences of opinion are already developing. One of the most controversial issues is whether the pre-hire clause and hot-cargo exemption applicable to the construction industry give the building trades unions as much as they hope for.

Here, the big question is labor's right to strike to obtain or to enforce the concessions it won.

The general purposes of the bill, of course, are fairly simple.

The measure seeks, in the first place, to promote the principles of democracy in union affairs, to protect the rights of rank-and-file members, and to guard against corruption and abuse of power by unscrupulous union officials and employers.

It seeks, in the second place, to protect the public and innocent employers from traditional union pressures that are unreasonable, at least in the moral and now in the legal sense.

That is done largely by the imposition of new and severe restrictions on the right of unions to use hot-cargo clauses and to engage in secondary boycotts and organizational picketing—restrictions that are particularly galling to unions like the teamsters and the building trades, which now find their available avenues to new members critically limited.

By Charles J. Harding, *Associate Editor, who has analyzed construction labor developments for several years.*

By the same token, the new provisions will strengthen the legal right of workers to exercise a free choice in union affiliation or nonaffiliation by curbing the union practice of organizing—through the employer—from the top down.

And the bill also seeks to simplify and expedite some of the work of the National Labor Relations Board and to make it easier for employers and unions to obtain judicial relief in labor disputes too insignificant for the board to handle. This it does by making it possible for them to go to state courts and agencies.

The bill, in general terms, looks good to employers who have been bold enough to venture opinions. Some in the construction industry are even hopeful that the bill will so chasten labor unions that they will be easier to deal with at the bargaining table. Those who are too optimistic, however, may find themselves in a fool's paradise.

Organized labor, still views the measure as a "killer" bill and warns that "it will not stop us nor will it destroy us." The building trades unions, meeting in San Francisco last week for their 50th Regular Convention, seemed happy about the concession they won and promised to live under the bill as law-abiding citizens. But they set a battery of attorneys in motion to develop a program that would mitigate the law's worst effects on the unions.

This type of determination, which unionists already view as a fight for survival, holds the inevitable promise of greater militancy on all available fronts and a full-scale effort through judicial attack to narrow the limitations and expand the concessions of the bill.

The fact that the bill tells the unions they must now sell their wares on the basis of their merits is in itself a strong inducement to higher and more excessive collective bargaining demands.

The burdens of the reporting requirements of the new bill may well start a trend toward local union consolidation or centralization that will, in turn, mean greater union strength.

The reasons for labor's defensive resentment are primarily two-fold. For the first time in the nation's history, unions face the prospect of being stripped of their clothing and put on public view. And also for the first time, unions are told they can no longer recruit new members in ways that have found common use—in the South and in construction, for example.

Those sections of the new bill that will reveal the mottled and blemished skin many unions now possess and that will establish safeguards for elections and trusteeships are lengthy and detailed—and burdensome.

Unions, for example, are required to submit three types of reports.

- Within 90 days after the law becomes effective, they must file with the Secretary of Labor copies of their constitution and by-laws and a report disclosing information that has been rather guarded in the past—including amounts of initiation fees, dues, and work permit fees; qualifications for and restrictions on membership; and authorization of bargaining demands and of strikes.
- Annual reports showing assets and liabilities and an explanation of all disbursements must be filed within 90 days after the end of each fiscal year. Union officers and non-clerical employees must file annual reports showing financial interests in and transactions with employers whose employees the particular union represents.

Union trusteeships call for another set of explanations and semi-annual progress reports.

Willful violation of the reporting requirements and concealment or destruction of records carry penalties of a $10,000 fine and a year in jail.

Records that form the basis of all reports must be preserved for five years. All reports become public information and can be examined by anyone. The Labor Department has the herculean task of handling, sorting, indexing, and storing the reports, and of seeing, through the injunctive process if necessary, that the required reports are filed.

The law, in addition, regulates in

detail the time and manner in which local, national and international union elections can be held, gives candidates the right to inspect union membership rolls, provides for the removal of officers for "serious misconduct," and gives any member the right to challenge and upset elections with the help of the Secretary of Labor and the federal courts.

It imposes fiduciary responsibility on union officers, establishes new bonding requirements, sets up new rules for the checkoff of union dues, tightens up the present bribery and extortion provisions of law and bars application of the doctrine of federal pre-emption in certain specified fields.

The bill, at the same time, gives union members the right to federal court injunctions to protect the individual rights conferred by the law's "Bill of Rights." And it clarifies the types of employer-employee payments that can be made without running afoul of the law. Specifically included are employer payments for "pooled vacation, holiday, severance or similar benefits, or defraying cost of apprenticeship or other training programs."

All this, as complicated as it seems, is relatively straight-forward compared to the law's Title VII amendments to the Taft-Hartley Act.

These are contained in seven sections, two of which—on boycotts, picketing and construction industry amendments—promise to keep the lawyers guessing for a long time.

Basically, the two controversial sections effect these major changes:

- They change the secondary boycott law by making it illegal for a labor organization or its agents "to threaten, coerce, or restrain any person" (specifically including employers and associations) if one of the objects is to force an employer to quit doing business with another person or to quit handling the products of another person.
- They change the law on jurisdictional disputes by forbidding a union to put pressure directly on an employer to gain a particular work assignment.
- They outlaw all hot-cargo agreements except those specifically permitted in the clothing and construction industries (see box).
- They permit unions and employers in the construction industry to make restrictive agreements relating to the contracting or subcontracting of on-site work. This, for example, would allow clauses forbidding the subcontracting of work to nonunion contractors. Right to strike for such a clause is questionable. And House conference members say the exemption does not permit agreements "relating to supplies or other products or materials shipped or otherwise transported to and delivered on the site of construction."
- The provisions make it unlawful to picket an employer for representation or recognition purposes where his employees are already lawfully represented by another union, or where there has been a valid election within the last 12 months, or where the picketing has gone on for 30 days without the filing of an election petition.
- They permit unions and employers in the construction industry to make labor agreements before workers are assembled or hired, doing away with the need for representation elections. House conference members say unions cannot use "force, coercion, strikes or picketing" to get such a contract.
- Unions and contractors will be allowed to negotiate, in non-right-to-work law states, contract clauses that require workers to become union members after seven days from the date of their employment.
- Construction industry labor contracts may include hiring clauses that give unions the right of referral, establish minimum training and experience qualifications for employment, and allow preference in certain hiring.

The task the construction industry now faces is to determine the difference between what the law says and what it means.

This requires an analysis of the bill in the light of case law as modified or affirmed by the bill's topsy-turvey legislative history.

Some believe the strike and picketing restrictions of the Sand Door, Moore Drydock and Denver Building Trades cases and the Mountain-Pacific hiring provisions remain unchanged. If so, construction unions have won little except when dealing with cooperative or submissive employers.

The New Law's 'Pre-Hire' Clause

"Sec. 705 (a): Section 8 of the National Labor Relations Act . . . is amended by adding . . . the following new subsection:

'(f) It shall not be an unfair labor practice under subsections (a) and (b) of this section for an employer engaged primarily in the building and construction industry to make an agreement covering employees engaged (or who, upon their employment, will be engaged) in the building and construction industry with a labor organization of which building and construction employees are members (not established, maintained, or assisted by any action defined in Section 8 (a) of this Act as an unfair labor practice) because

'(1) The majority status of such labor organization has not been established under the provision of Section 9 of this Act prior to the making of such agreement, or

'(2) Such agreement requires as a condition of employment, membership in such labor organization after the seventh day following the beginning of such employment or the effective date of the agreement, whichever is later, or

'(3) Such agreement requires the employer to notify such labor organization of opportunities for employment with such employer, or gives such labor organization an opportunity to refer qualified applicants for such employment, or

'(4) Such agreement specifies minimum training or experience qualifications for employment or provides for priority in opportunities for employment based upon length of service with such employer in the industry or in the particular geographical area:

'Provided that nothing in this subsection shall set aside the final proviso to Section 8 (a) (3) of this act:

'Provided further, that any agreement which would be invalid but for clause (1) of this subsection, shall not be a bar to a petition filed pursuant to Section 9 (c) or 9 (e).' "

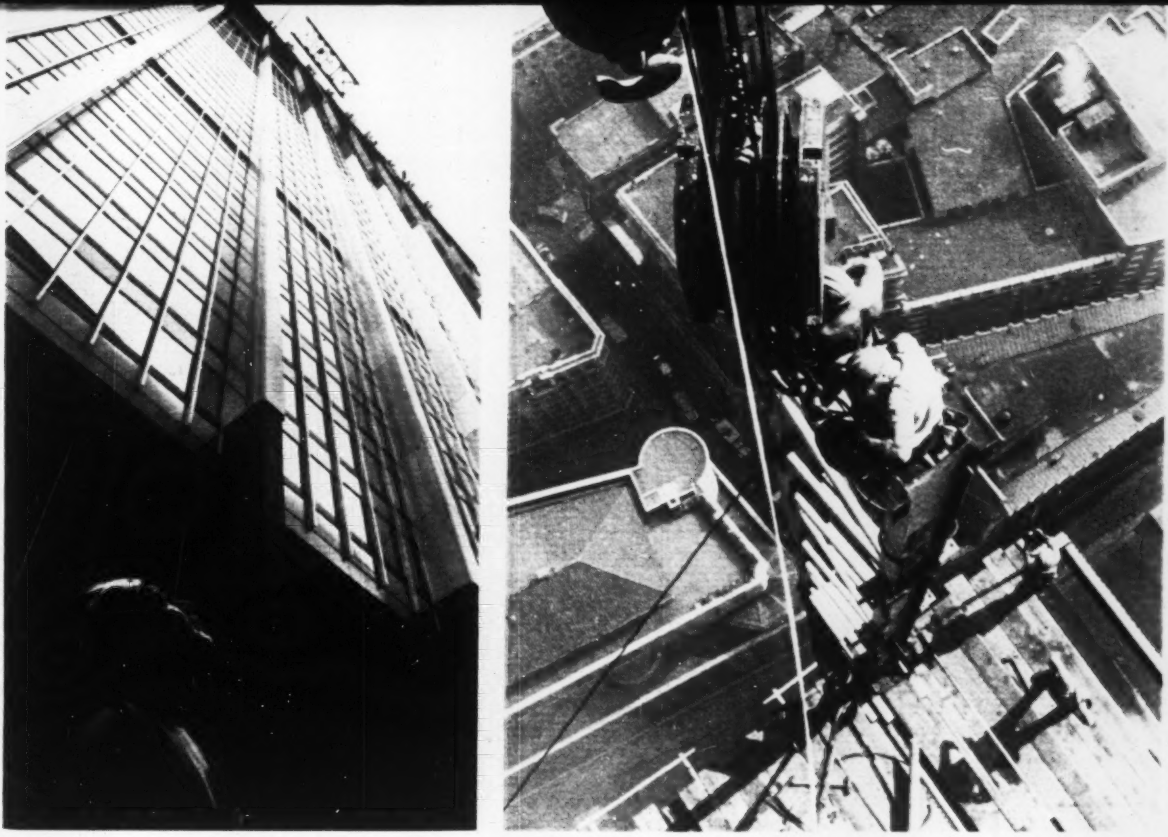
Construction's 'Hot-Cargo' Exemption

The law forbids and makes unenforcible an angreement between a union and an employer whereby the employer agrees not to deal with some other person or not to sell or handle certain products. (Sec. 704 (b))

This provision does not apply to the construction industry in the following circumstances:

"Provided that nothing in this subsection (e) shall apply to an agreement between a labor organization and an employer in the construction industry relating to the contracting or subcontracting of work to be done at the site of the construction, alteration, painting, or repair of a building, structure, or other work:

"Provided further . . . that nothing in this Act shall prohibit the enforcement of any agreement which is within the foregoing exception."



Steel Tops Out . . . 850 ft Above the Street

Steel workers topped out the new Chase Manhattan Bank in downtown New York City last week. Fabricated structural steel for the 60-story headquarters totals 53,000 tons, rating only below the Empire State and RCA buildings. Completion of the $115-million building is scheduled for September 1960. Architect is Skidmore, Owings & Merril; Weiskopf & Pickworth is the structural engineer; and Turner Construction Co., the general contractor. All are New York City firms. Bethlehem Steel Co. is the steel contractor.

Outlook: Tight Control Over Road Funds

After months of wrangling and rewriting, Congress has finally produced a stopgap Interstate Highway System financing formula acceptable to President Eisenhower.

The outlook is that the Bureau of Public Roads will keep tighter control over state spending.

The temporary solution takes care of fiscal 1961 and 1962 needs. Main features are a one-cent-per-gal increase in the federal gas tax, bringing it to four cents, and the funneling of some federal vehicle-excise taxes from the Treasury's General Fund to the Highway Trust Fund.

The tax increase will start October 1 and run to July 1, 1961, adding $1 billion to the Trust Fund.

Then starting July 1, 1961, $2.5 billion of excise taxes will go into the Trust Fund over the next three years. This is comprised of one-half the 10% federal excise tax on automobiles and five-eighths of the 8% tax on parts and accessories. Those taxes now go entirely into the General Fund.

Even with the added revenue, federal officials say they will have to slow the program. The emergency solution drops the authorization for fiscal 1961 from $2.5 billion to $2 billion; fiscal 1962's $2.2 billion authorized by the Highway Act of 1956 remains the same.

But allocations will be held to $1.8 billion for 1961 and $2 billion for 1962 to keep spending in line with anticipated revenues (see ENR Sept. 10, p. 32 for each state's share).

If the states rush to carry out all projects already authorized, spending would outpace revenues. To prevent this, the Bureau of Public Roads is trying to work out within the next week or so some system of controlling state expenditures on new obligations.

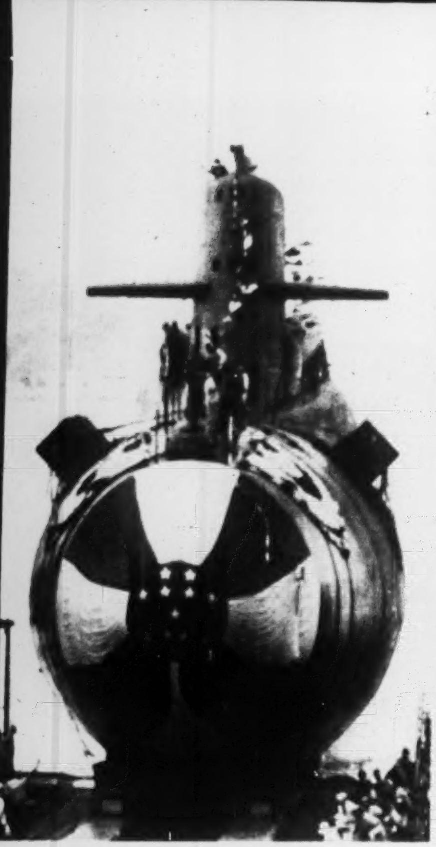
One possibility is a monthly or quarterly quota on the dollar obligations a state can make.

Purpose is to match federal payments with revenue inputs to the Trust Fund. Approximately $175 million to $180 million are put into the fund each month. Whether on a monthly or quarterly basis, this amount would be divided among the states in the same way apportionments are made.

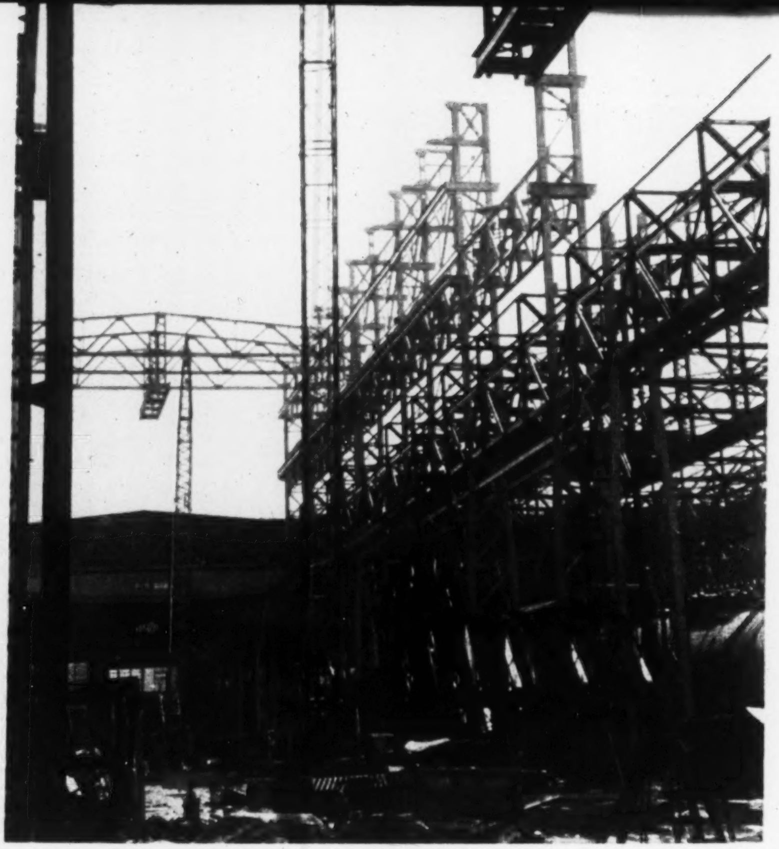
About $360 million will have to be borrowed from the Treasury soon to keep the highway program going until the new tax receipts start coming in.

One of the main reasons given for the straitened condition of the Trust Fund is the accelerated spending authorized by Congress in the Highway Act of 1958. This week's emergency financing measure is only a temporary one. Congress is to reconsider most aspects of the Interstate Highway Program in 1961.

The new measure exempts cities and industrial-commercial areas along the Interstate network from Highway Act provisions limiting billboard advertising.

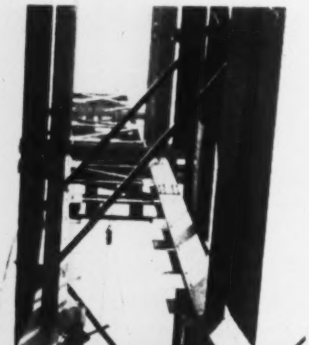


As submarines grow . . .



. . . So grow the shipways they're built on.

New Craneway Goes Through Old One



FABRICATED column, 8 ft wide, narrows to 6 ft through old framing.

Submarines to carry and fire the Polaris missile will be longer, taller and have heavier components built into them than any now under way. That means bigger facilities for sub building.

Electric Boat Division of General Dynamics needs sub-building ways 136 ft high with 60-ton-capacity rail cranes at the Groton, Conn., yard. Present shipways there have 15-ton-capacity cranes on 70-ft-high frames.

Here's the hitch. Shipways at Groton are side-by-side with rail cranes running on common double-side frame lines between the ways. Electric Boat has to convert two ways and do it now. But one available way is next to where the USS Tullebee is under construction.

Rail cranes over the Tullebee couldn't be stopped at any time during the work in the next way. And loads on the new, larger craneways ruled out adding to the existing structure.

Engineers designing the new framing had to thread the "common" frame line of the new craneway up through the existing framework, and do it without hampering Tullebee construction. The steel contractor built this section of the craneway by shoehorning the new steel among the sections of existing framing.

Columns of the existing craneway are 8 ft wide. New columns—pairs of 14WF136 sections set on new foundations—are 8 ft wide at the bottom, too, but narrow to 6 ft. wide as they enter the existing framework.

In the shop, each column was made up in two sections; Shop crews fabricated the top sections but left the bottom half of each column broken down for field assembly in place inside the present craneway framework.

On the job, workmen removed the existing roof trusses and off-side column line, leaving the center frame between ways untouched. Roof trusses were modified and then stored for later use.

Steelworkers, with an 80-ton-capacity crane, lowered elements of column sections down through the existing framework from above. After braces were placed with temporary bolted connections, the upper section of each column was hoisted above the present craneway and spliced to its bottom half, poking up through the old framework.

Alignment was critical; crane rails, 77 ft 5 in. apart, were kept to ¼ in. tolerance.

Engineers for the project are Frederick R. Harris, Inc., New York City. Irvington Iron & Steel Works, New Brunswick, N. J., is the steel contractor.

Public Works:

Congress Has Its Way, Less 2½%

A revised, highly controversial public works appropriation bill for fiscal year 1960 finally became law last week after both the Senate and House of Representatives voted to override President Eisenhower's veto of the measure. The Senate voted 72-23; the House, 280-121.

This is the second public works money bill approved by Congress this year. An earlier one, also vetoed by the President, failed to win the necessary two-thirds majority to override.

The new money bill totals $1,185,309,093 and includes 67 new construction starts for the present fiscal year (ending June 30, 1960; see below).

It contains exactly the same projects that were included in the earlier, unsuccessful bill, but cuts funds for each project—both new and continuing—by 2.5% from the earlier bill.

President Eisenhower criticized this blanket reduction in funds allocated by Congress for projects already under way as possibly causing serious and costly delays in construction schedules.

By overriding the veto, Congress achieved what it had been unable to do since President Eisenhower took office seven years ago. The veto of the earlier public works bill this year had been sustained in the House of Representatives by but a single vote, however.

Whether the President will play a final trump card and delay first construction money for the 67 new starts is still uncertain. Mr. Eisenhower's major criticism of the appropriation bill is that it includes new construction starts at a time when the federal government should be more concerned with inflation and a reduction in spending.

The President can still order the Bureau of the Budget not to allocate the funds to the Bureau of Reclamation and the Corps of Engineers—or he can pass the word for Administration officials to drag their feet in releasing first funds to start these new projects.

This tactic, however, can only delay the new starts. Once Congress votes funds to start work—and the project has been authorized—there's no turning back.

First year funds for all 67 new projects total only about $53 million, compared with something over $800 million they will eventually cost.

By breaking the President's veto magic on the public works bill, Congress apparently has ended the Administration's death-grip limiting new construction starts. Washington observers feel that next year's appropriation bill will again have numerous new projects.

The 67 Construction Starts Ike Didn't Want . . .

	Initial Outlay (Add 000)	Estimated Total Cost (Add 000)
Corps of Engineers		
Dillingham Harbor, Alaska	$ 406	$ 412
Beaver Res., Ark.	1,500	56,100
Mill Creek Levees, Calif.	500	1,740
New Hogan Res., Calif.	1,500	19,300
Redwood City Harbor, Calif.	1,378	1,380
San Jacinto R., Calif.	225	5,770
Hall Meadow Brook Res., Conn.	250	2,210
Mad R. Res., Conn.	275	5,970
E. P. Channel, Fla. (reimbursement)	39	39
St. George Is., Fla. (reimbursement)	43	43
Caloosahatchee R. Waterway, Fla.	600	6,860
Kahului Harbor, Hawaii	140	963
Drury Drainage Dist., Ill.	540	1,520
Henderson R. Diversion, Ill.	550	1,750
Hunt, Lima Lake Drainage, Ill.	1,000	5,420
Red Rock Res., Iowa	1,113	71,400
Council Grove Res., Kan.	300	12,700
Wilson Res., Kan.	500	18,100
No. 2 Barren Res., Ky.	1,000	23,500
Barataria Bay, La.	1,000	2,400
Algiers Cutoff, La.	1,420	1,420
Boston Harbor Channel, Mass.	825	829
Westville Res., Mass.	1,800	7,450
Grand Marais Harbor, Mich.	300	1,020
Pascagoula Harbor, Miss.	1,242	1,248
Des Moines, Mississippi Levees	500	1,690
Gering, Mitchell Valleys, Neb.	350	1,400
Rio Grande Floodway, N.M.	800	4,400
Two Rivers Res., N.M.	75	6,900
Buttermilk Channel, N.Y.	1,500	1,551
Hudson R. Channel, N.Y.	500	36,300
N. Y.-N. J. Harbor Pier Line, N.Y.	500	1,311
Ohio St. Bridge, Buffalo R., N.Y.	2,000	4,520
Morehead City Harbor, N.C.	600	1,382
Wilkesboro Res., N.C.	1,000	8,350
Muskingum River Res., Ohio	500	615
W. Branch Mahoning R. Res., Ohio	525	6,940
Columbia-Malheur R. Protection, Ore.	250	423
Allegheny R. Res., Pa. and N.Y.	1,400	113,000
Brookville, Pa.	500	1,340
Shenango R. Res., Pa.	500	28,000
Port Mansfield Channel, Tex.	150	3,446
Colorado R. Channel	400	1,310
La Quinta Channel, Tex. (reimbursement)	954	959
Proctor Res., Tex.	300	17,100
Pound Res., Va.	2,500	17,700
East Raineile, W.Va.	500	840
Princeton, W.Va.	500	1,085
Summersville Res., W. Va.	2,000	46,800
West Tennessee Tributaries	200	8,400
Wolf R. and Tributaries, Tenn.	300	2,025
Yazoo R. Backwater, Miss.	50	30,900
Bureau of Reclamation		
Trinity Dam Power Plant, Calif.	2,415	59,607
Burns Creek Dam, Idaho	500	44,616
Chief Jos. Dam, Wenatchee Div., Wash.	500	7,579
Missouri River Project		
Cedar Bluff Unit, Kan.	400	4,625
East Bench Unit, Mont.	1,000	20,597
Red Willow Dam, Neb.	525	6,597
Upper Colorado Project		
Smith Fork Project, Colo.	500	4,420
Hammond Project, N.M.	500	3,280
Seedskadee Project, Wyo.	1,354	37,885
Loan Program		
Chowchilla Water Dist., Calif.	910	2,633
Sausalito Irr. Dist., Calif	1,350	4,384
Santa Ynez R. Cons. Dist., Calif.	2,454	3,774
Centerville-Deuel Creek Irr. Co., Calif.	399	399
Pleasant Valley Water Dist., Calif.	390	2,032
Georgetown Divide Util. Dist., Calif.	1,647	3,867
Total	**$52,644**	**$804,526**

Senate Settles Airport Sewer Battle

Congress moved last week to settle the last public controversy blocking completion of the $100-million jet airport for Washington, D. C.

The Senate included in a catch-all money bill $2.5 million for construction of a sewer line that will connect John Foster Dulles International Airport, at Chantilly, Va., with the District of Columbia system.

Sewage disposal had generated the final free-for-all in a long series of fights that have afflicted Washington's second airport project during the last 10 years.

The hottest of the early battles killed off the first site selected for the airport and caused a six-year delay in starting the project. End result of that setback, however, is a net gain, because planners last year were able to design for commercial jet operation on a 9,800-acre tract as compared with the 6,700-acre site that appeared adequate a few years ago.

Pulling and hauling by contending forces in the Administration, in Congress and in the surrounding area continued through the intervening years. And conflicts were not ended after the President, as directed by Congress in 1957, had a new site selected on the basis of a study and report by his then special assistant, Elwood R. Quesada. General Quesada is now building the project as Administrator of the Federal Aviation Agency, successor to the Civil Aeronautics Administration.

Like CAA before it, FAA has to bow to the directives of its governing council—the 535 members of Congress.

Congress just last month had scotched FAA's request for money to build the sewer line and voted for an alternative. Mainly at the insistence of House Appropriations Committeeman Frank T. Bow (R., Ohio), it approved a cheaper plan and voted $750,000 for construction of an airport sewage treatment plant. The plant would discharge its effluent into a small tributary of the Potomac River above the Washington water supply intake.

This Congressional action brought down the wrath of federal, state and local officials who had been fighting to prevent pollution of the Potomac. President Eisenhower ordered construction of the treatment plant held up pending a restudy. Secretary Arthur S. Flemming of Health, Education and Welfare backed up his Public Health Service officers by condemning the Congressional decision. Other officials joined in blasting the action as direct federal contravention of a general understanding among federal, state and local governments that no treatment plants or sewers would be built to discharge into the Potomac above Washington.

Construction of the sewer line from the airport would conform with this broad anti-pollution agreement. The line is to connect with the district system, which will conduct the sewage to the city's treatment plant downstream.

With the sewer impasse apparently broken, FAA engineers see the way cleared for construction of all essential facilities by the January 1961 target date for airport operation. Grading of the site is 70% finished, and paving is moving at a pace that promises completion of the three runways now under construction well before the end of 1960.

FAA's consultants will report their findings this month on the best and most economical method of transporting aviation fuel to the airport—by pipeline, tank car or truck. But this decision is not expected to arouse any local opposition of the kind that badgered the construction contractor when he made arrangements to haul cement by truck from the mills to the airport.

Public hearings have smoothed out the difficulties of selecting a route for the airport access highway and, later adjusting final location for right-of-way acquisition. The last hearing on the access artery, held in July, led FAA to change the location last month of the second five-mile section to be approved for land buying on the 17-mile route.

The access highway will be paid for with airport moneys. Studies first were made to see if new federal-aid highways being planned and put under construction in Virginia could be routed to serve the airport. When this proved unfeasible, FAA took on the job and called in the Bureau of Public Roads to handle it.

With the access route in operation, driving distance between the airport and downtown Washington will be reduced from 27 miles to 25 miles, and driving time will be cut much more than mileage. Practically the entire trip will be over limited-access highways, with new interstate routes providing the connection between the access road and the central city.

Around the World . . .

- **Big hydro plans**—A hydroelectric plan being worked out in Tanganyika (in Africa) would call for a $280-million dam on the Rufiji River, and 15 other dam sites. Goal is to develop 68,000 sq miles of land and to make the Rufiji navigable for 120 miles inland from the Indian Ocean.

- **Great big geiger counter**—Delaware will soon be testing fallout radiation in milk, food, water, air and sewage with a 256 Channel Analyzer, described as a "great big geiger counter." The state has trained 18 sanitary engineers, physicists and chemists in detecting and protecting against radiation.

- **Kremlin consultants**—Five railroad experts from USSR are advising the Iraqi government on its $85-million railway reconstruction program. The Soviet group replaces a U.S. consulting firm whose contract was terminated shortly after the revolution last year.

- **Busy airport**—Atlanta will have to build a second airport within the next 10 years to meet the growing demands of air traffic, says Eddie Rickenbacker, head of Eastern Air Lines.

- **Egyptian road**—The United Arab Republic is planning a highway across marshy Lake Menzaleh to connect Port Said, on the northern end of the Suez Canal, with the agricultural centers in the Nile Delta. The government has commissioned a feasibility study of the $6-million job.

- **More TVA dams?**—Engineers of the Tennessee Valley Authority have given the Elk River Development Association a plan for five dams on the Elk, seventh largest tributary of the Tennessee River. The dams—25 ft to 142 ft in height—would be spaced along 170 miles of the river, which flows southwest out of Tennessee to meet the Tennessee River in Northern Alabama. The TVA study has not progressed as far as cost estimates.

- **Canal campaign**—New York navigation interests are campaigning to have the state's 527-mile canal system transferred to the federal government. They argue that Washington can better afford the maintenance and improvement of the system than New York. Operation of the canals costs $5 million annually. It is the only state-operated system in the country.

A-E to Plan Heat Reactor Model for Industrial Use

The nation's first low-temperature process heat reactor will be designed and built by the Chicago architect-engineer firm of Sargent and Lundy.

The pressurized water reactor, of greatest potential interest to metal, chemical, petroleum, paper and other industries using heat, will cost about $4 million and will be designed to produce about 40,000 kw.

It will provide heat for a sea water distillation plant to be located on the California coast. The Atomic Energy Commission expects the reactor to be finished in about two years.

This experimental model, about 6 ft in diameter at its core, will be made of carbon steel, rather than stainless steel, to keep costs down. It's fuel element will be aluminum-clad. These materials are expected to be adequate at the relatively low temperatures of this reactor. The unit will build up a steam pressure of about 150 psi. Most potential industrial demand would be for pressure in the 60 to 100 psi range.

Potential advantages: elimination of smoke and waste gases; location of plant independent of fuel source; no fuel storage space needed; infrequent refueling period; and use of nuclear irradiation for isotope production and production of plutonium as a byproduct.

• **Canadian reactor coming**—Canada will build a $60-million nuclear power station on Lake Huron. The 268,000-hp electric generating station will be on a 2,300-acre site south of Inverhuron Provincial Park.

Canada's Atomic Energy Control Board must approve the site.

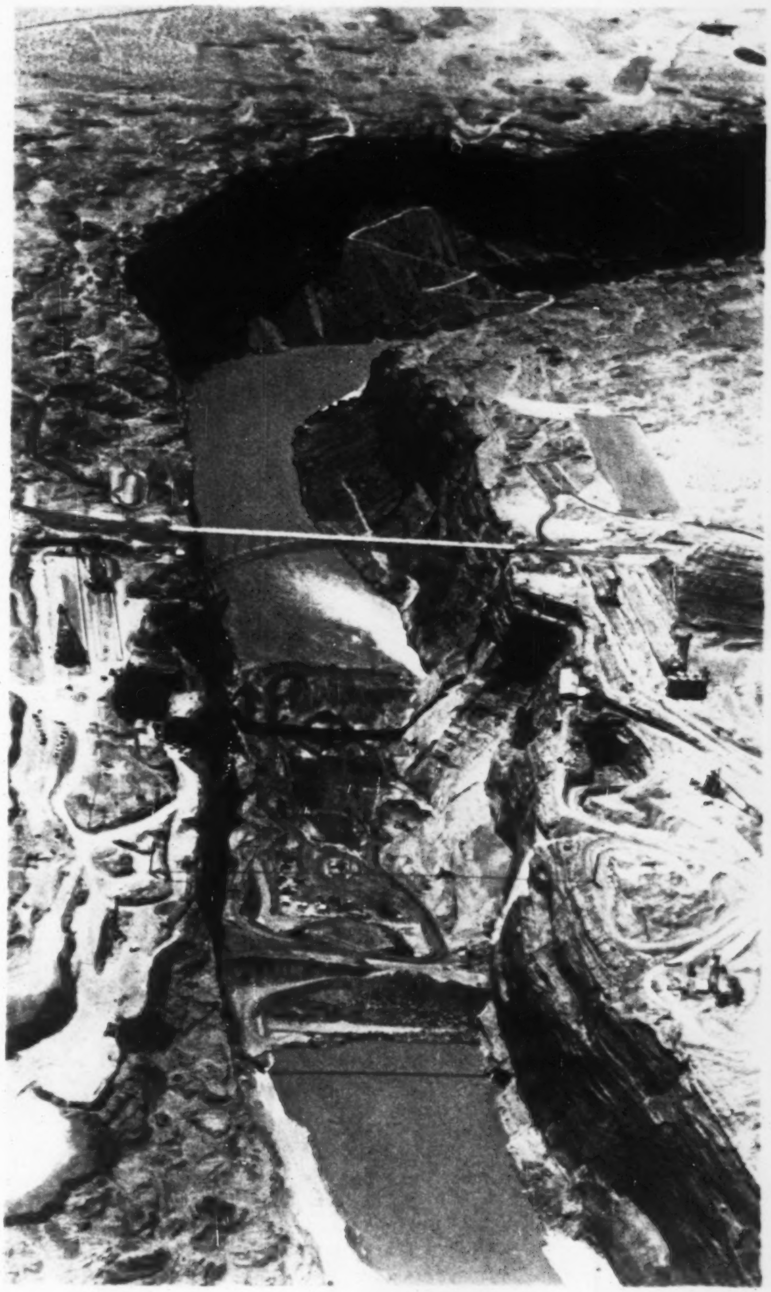
Atomic Energy of Canada Ltd. will build the station, probably in 1961.

Kings River Tunnel Job To Start Next Month

Work will begin about October 1 on the tunnel and surge chamber for Pacific Gas and Electric Company's Kings River Powerhouse in Fresno County, Calif. A contract for this phase of the project has been awarded to a joint venture of Winston Brothers Co. of Monrovia, Calif., and Green Construction Co. of San Mateo, Calif.

The powerhouse is scheduled for operation in the spring of 1962. It will be the third and final new plant of PG&E's $80-million Kings River Project, begun in 1955. Two others upstream and two reservoirs have been in operation since last winter.

The horseshoe-shaped tunnel will be 14 ft in diameter and in two sections totaling 3½ miles. It will be connected by a 2,000-ft inverted siphon crossing Dinkey Creek, a Kings River tributary.



Where the River Disappears

The Colorado River seems to stop, then start again either side of the hole into which Glen Canyon Dam is being built.

Actually, a diversion tunnel in the canyon wall at the right carries the river's flow around the damsite. Note the white water where it discharges beyond the downstream cofferdam.

Keyways for the dam are seen cut in the canyon walls just upstream from the new Glen Canyon Bridge, and excavation proceeds in the streambed. Spillway tunnels, too, are being excavated (ENR July 16, p. 49).

Glen Canyon Dam, 700-ft-high structure in the Bureau of Reclamation's Upper Colorado River Project, will be upstream from Hoover Dam in Arizona, near the Utah line. Merritt-Chapman & Scott Corp. is the constructor.

To repair the damage to Bhakra Dam . . .

Slocum Wants Complete Control

Harvey Slocum has demanded complete administrative control of the Bhakra-Nangal power and irrigation project.

The famed dam construction consultant, who rushed back to India from the U. S. after a hoist chamber collapsed in Bhakra Dam's right diversion tunnel recently (ENR Sept. 3, p. 23), says, "There is to be no emergency operation, but the disease is like cancer and calls for a detailed examination and the best remedy."

Mr. Slocum's demand throws doubt on the effectiveness of the administrative machinery set up for the $360-million power project. "I would like to be boss," Mr. Slocum says, to do away with "irritating restrictions like those inherent in present procedures. . . . Suppose I want pictures of certain works to be taken. I must have them that very day. Nobody should tell me that estimates are to be prepared and financial sanction obtained and that the stuff will be available after three days."

"I would like to be boss."

Housing Trimmed to $1 Billion

The housing tennis ball has finally stopped bouncing between Congress and the President, but now it looks more like a ping-pong ball.

What started out as a $2.6-billion omnibus measure at the beginning of the session has finished, after much political huffing and puffing and two vetoes, as a modest bill less than half the original size. President Eisenhower has indicated he will sign it into law.

Although the bill is not ideal from the President's point of view, and certainly not ideal from Congress' standpoint, it does include new mortgage insuring authority for the Federal Housing Administration—a point the Administration particularly wanted and for which it was willing to make concessions.

Here are the major provisions of the 1959 housing bill:

- $8 billion of new mortgage insurance authority for FHA, without the termination date the President objected to in earlier versions.
- $650 million for slum clearance-urban renewal for a two-year period. Earlier versions had this amount for a single year.
- Authorization for 37,000 additional public housing units. The President wanted none.
- $50 million in direct loans for housing for the elderly. The President objected to this before.
- The measure establishes a new schedule of lower downpayments on FHA-insured mortgages, which the Administration opposed. These permit a 3% downpayment on the first $13,500 of a house's evaluation. The maximum insurable mortgage is increased from the present 20,000 to $22,500. It also raises the maximum interest that can be charged on rental and co-op housing.

Dropped from the bill entirely, in accord with Mr. Eisenhower's wishes, was a provision for $50 million for federal loans to build college classrooms.

The bill is the result of a remarkable agreement between a Congress irritable over the President's dominance and anxious to adjourn and a President with enough victories under his belt to be magnanimous about small concessions.

Congress' original big plans for housing—a $2.6-billion measure—never got out of the talking stage after Mr. Eisenhower laid down a firm anti-inflation line. In June, Congress came up with a $1.6-billion measure that the President popped back with a stinging veto charging extravagance and inflation. Back came Congress with a $1.3-billion bill early this month; back came the President with another veto.

Then just as housing supporters despaired of any bill this session, the President passed the word that, with a few modifications, he would be willing to accept a third try.

His eased attitude may have been partly an attempt to smooth ruffled Congressional feathers. Congress has been growing increasingly bitter and increasingly rebellious in the face of the free-swinging veto and rigid budget stand. It was moving toward overriding the public works veto.

Pennsylvania, Delaware Sign Flood Control Pact

An interstate compact designed to develop water resources and provide flood protection for communities in southeastern Pennsylvania and the State of Delaware was signed last week by Gov. David L. Lawrence of Pennsylvania.

The measure directed Governor Lawrence to enter into agreement with Delaware on a program that stands to benefit the bi-state Brandywine Valley. Wilmington, Del., is the principal city in the area.

Purpose of the compact is to improve the quality of the water, prevent and control floods, protect the watershed, augment the supply during periods of low flow and promote conservation and recreation.

The arrangement would go into effect as soon as it is ratified by Delaware and would authorize the Pennsylvania Department of Forests and Waters to:

- Construct, operate and maintain a series of multipurpose dams and reservoirs on Brandywine Creek and its tributaries.
- Help finance the dams and reservoirs and augment the flow of the creek at the Delaware State line.
- Cooperate with industries and municipalities of southeastern Pennsylvania in apportionment of water.
- Supply to the Borough of West Chester up to 6 mgd of water upon payment by the borough of its proportionate share of the costs.
- Augment water supplies, during dry periods, in Brandywine Creek for the benefit of Wilmington upon its payment of a share of the costs.

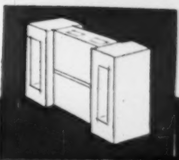
Senate Group Departs To Inspect Soviet Dams

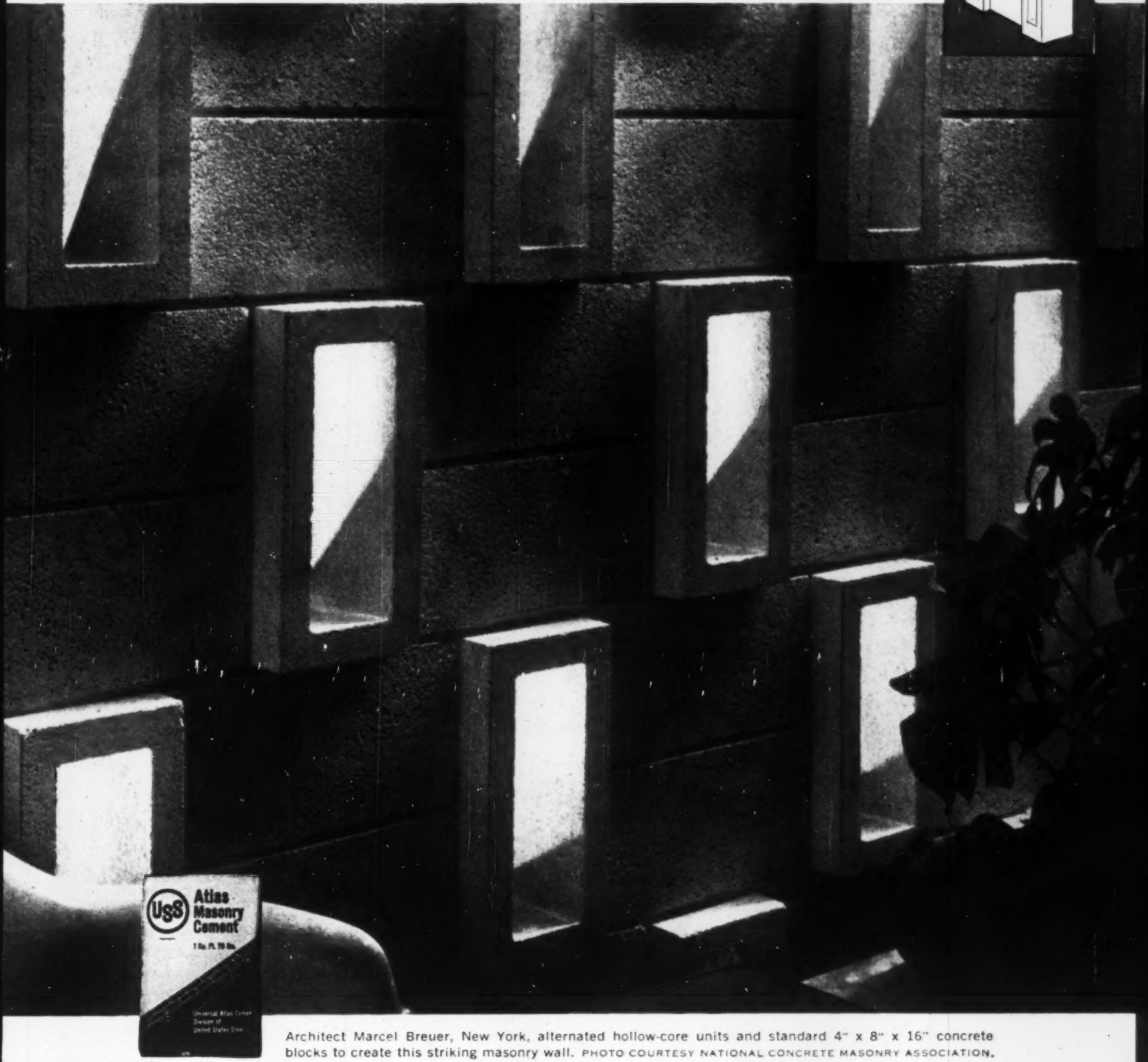
A nine-man group appointed by Senator James E. Murray (D., Mont.), chairman of the Senate Committee on Interior and Insular Affairs left this week for an inspection of hydroelectric projects in the USSR.

Heading the group is Senator Frank E. Moss of Utah. Other members are Senator Ernest Gruening of Alaska; Vic Reinemer, executive secretary to Senator Murray; Michael W. Straus, former Commissioner of Reclamation; Milton C. Mapes, of the Senate committee staff; Clyde Ellis, general manager, National Rural Electric Cooperative Association; and Alex Radin, general manager, American Public Power Association.

Included also, as non-paid engineering consultants to the group, are Harry A. Kuljian, president of The Kuljian Corp., Philadelphia, and Harvey F. McPhail manager of Kuljian's hydroelectric division.

Great new things are shaping up in concrete block





Architect Marcel Breuer, New York, alternated hollow-core units and standard 4" x 8" x 16" concrete blocks to create this striking masonry wall. PHOTO COURTESY NATIONAL CONCRETE MASONRY ASSOCIATION.

Atlas Masonry Cement provides the right mortar

Concrete blocks in a range of new designs . . . colors . . . and textures are being used to create unusual and distinctive effects in masonry construction. For structural or decorative use, indoors and out, the economical concrete block is now a major design element in today's building plans. And to lay up these new concrete masonry units, Atlas Masonry Cement continues to be the preferred basic material for mortar. It helps produce a smooth, workable mix . . . assures a stronger bond . . . gives weathertight joints that are uniform in color . . . complies, too, with ASTM and Federal Specifications. For information, write: Universal Atlas Cement, Dept. M, 100 Park Avenue, New York 17, N. Y.

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CIRCLE 49 READER SERVICE CARD

Dock Job Fights Water on Two

Cofferdam (arrow) keeps reconstruction area free of dock water.

Major reconstruction of a three-dock system in Liverpool, England, has been complicated by the need to keep the docks in service during the job. The project involves combining two of the docks into one and replacing three locks that serve the docks with one large lock.

All work must be carried on behind cofferdams to hold back the water in the docks and in the Mersey River. Ships using the docks during the 11-year program enter through passages from other docks at either end of the system.

The docks are protected by locks because the port's Mersey River has a tidal difference of 30 ft.

Handling ships at the quays would be nearly impossible without the locks to keep water levels in the docks near the high tide level.

Before work started, entry into the docks was through two adjacent locks into Langton Dock. Both were 65 ft wide with lengths of 119 ft and 238 ft respectively. A larger lock—600 ft long and 99½ ft wide—gave entry into Canada Dock. Access to Brocklebank Dock was via passages from both Langton and Canada Docks.

In the reconstruction both Canada Lock and Canada Basin, the entries to all three locks, are being eliminated entirely.

The two Langton locks are being replaced with one lock, 825 ft long and 130 ft wide.

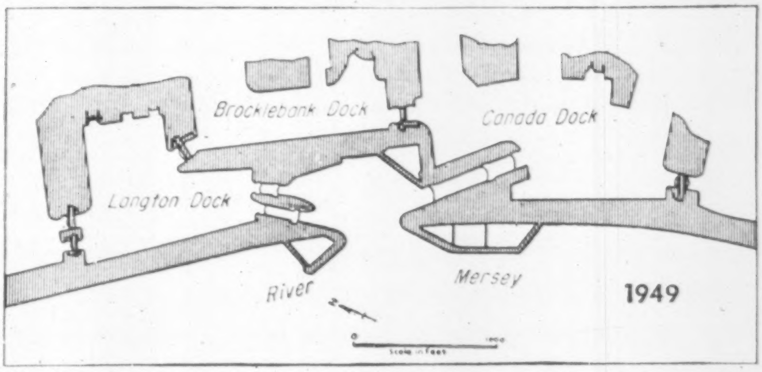
Also, Langton and Brocklebank Docks are being combined into a single dock by removing a large portion of Brocklebank Quay. What remains of this quay will be added to existing Canada Quay by filling in Canada Basin. With the removal of the quay there will be no need for a Langton-Blocklebank passage.

The existing passage between Brocklebank and Canada Docks is being widened from 80 ft to 130 ft. This passage will be closed by a box gate whose deck will carry a road and railway to service Canada Quay, which is being extended. The deck will be pivoted. It will rise automatically to the level of the quays when the gate is put in place across the channel, and drop when the gate is withdrawn into a chamber with the quay on the west side of the passage.

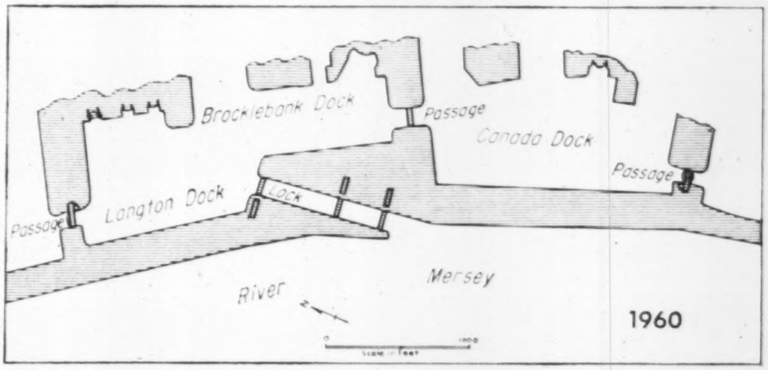
The new lock wil be 50 ft deep at high tide and 19 ft deep at low. It will enable ships to enter the docks during most tide conditions. In contrast, the old locks permitted deep draft ships to enter only during a six-hour period at high tide.

- **Mass concrete walls**—Lock walls will

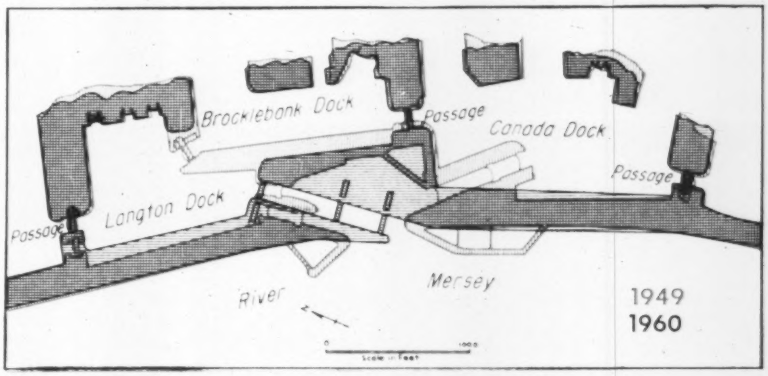
Fronts



IN 1949, before renovation of three-dock system, ships entered through three locks in the quay walls. Access to Brocklebank Dock was from adjacent docks.



IN 1960 one large dock will serve all three docks, Brocklebank Quay will be largely removed to combine two docks, passage to Canada Dock will be widened.



THE CHANGES (black) require a variety of construction techniques.

be of mass concrete, founded on rock 65 to 70 ft below the coping, which will be 9 ft above high water level of spring tides. Walls will be 10 ft thick at top, and widen to about 35 ft at bottom, through a series of stepbacks on the dock side. Lock floor will be plain concrete, 3 ft thick, vented with vertical drain pipes to eliminate upthrust from the water-bearing substratum.

Each wall will incorporate a large leveling culvert with a series of outlets connecting with the locking chamber. Water flow will be controlled by hydraulically operated sluice gear, with hand-operated gear as emergency standby.

Instead of the antiquated chain-operated timber gates of the old locks, the new one will have three electrically operated steel and timber box gates that slide into recesses in the quays. The new gates—133 ft 6 in. long and 31 ft 9 in. wide—will be fitted with heavy, mild-steel keel flats that slide on granite ways on the lock floor. A standby diesel generator will take over in case of power failure.

Gates will divide the lock into two unequal compartments (one 518 ft long, the other 275 ft) to save water and time when the full length is not required.

New walls for the quays will be similar to the lock walls. They will be mass concrete founded on rock. Concrete piles will be used in one area where the rock is very deep. The walls will all be 10 ft wide at the top; bottoms will vary according to rock depth. Old construction refuse will be used as fill beween the walls.

• **How they're doing it**—Accomplishing these jobs requires a variety of construction techniques. At the Mersey end of the lock construction, the river will be shut off by a dam connecting extensions of the quay walls at either side of the entrance to the old Canada Basin to permit construction of the new lock to be done in the dry.

Meantime the inner end of the lock area has been blocked off so that work can proceed there independently. A 430-ft-long dam consisting of a row of steel sheetpiling with earthfill on both sides was constructed between Langton quay and the end of the old Brocklebank Quay.

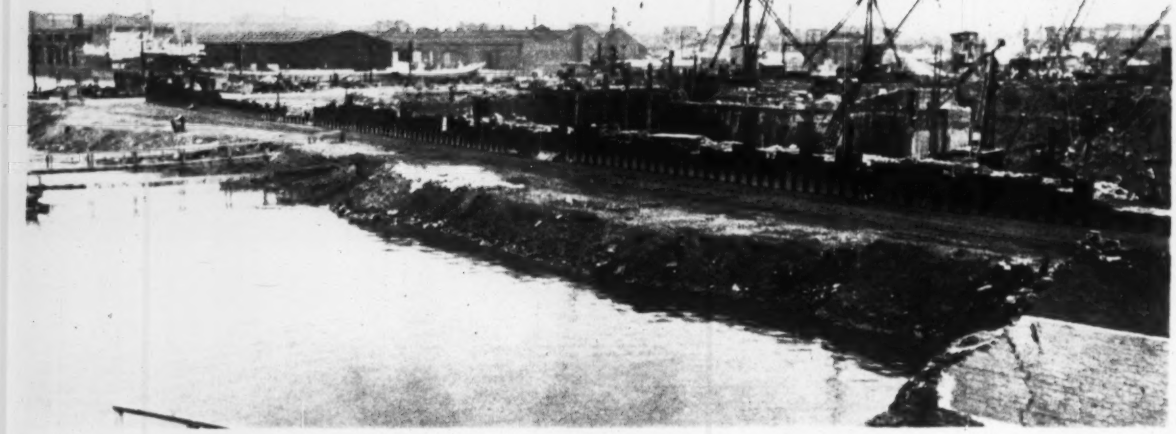
At the river end of the old Langton Lock a portion of new wall was built (within a cofferdam), and connected by another sheetpile and earthfill dam to the island that separated the two Langton locks. Another portion of new wall, plus another sheetpile and earthfill dam, closed an adjacent lock.

Thus an area was created that could be pumped free of water, allowing demolition of the old works and construction of the dock end of the new lock to proceed in the dry.

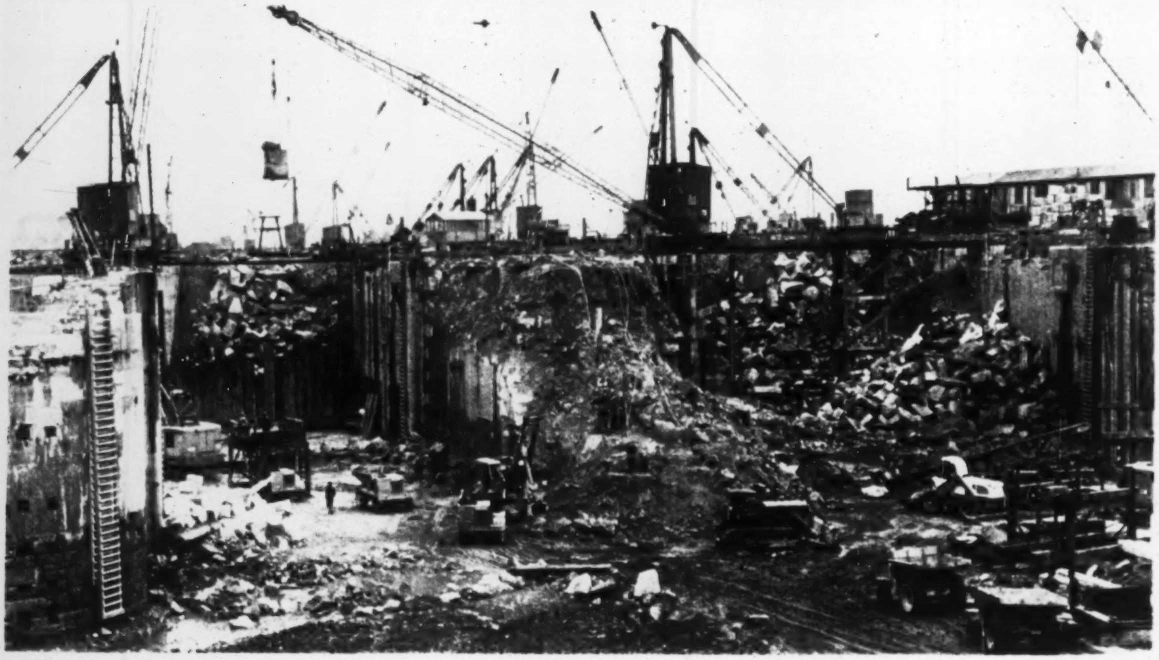
Pneumatic hammers are used to demolish the old locks, which consist of sandstone in mortar with granite facing. Some of the granite is salvable, but most of the refuse is being used as fill.

• **Dual purpose culverts**—A major complication on the project is the extension of a network of culverts and sluiceways with a dual purpose—controlling water level in the lock and dealing with the serious problem of mud collecting in Canada Basin and in the Mersey at the entrance to the basin.

Engineers in the last century conceived of using discharge from the locks and docks as a means of sluicing the mud out into the river stream. One system connected two drydocks within Langton Dock to a series of outlets along the walls of Canada Basin. When



Earth and sheetpile dam between Langton and Brocklebank quays keeps out dock waters.



Cofferdams stop river water running between the sides of the Langton Docks.

the drydocks were emptied, water emerging from the outlets sluiced out the basin.

Each of these culverts and sluices had to be located and plugged with concrete. An open one, cut during excavation, would create a serious flood. Layout diagrams of previous work are a help in locating the culverts. However, since work has been done in a succession of projects during more than a hundred years, not all of them are known in advance. If a culvert is encountered, it is traced to discover whether it is open or part of a system that has already been plugged.

A new system of culverts is being incorporated in the new work for water leveling and sluicing mud from around the entrance to the new lock.

The Brocklebank passage was blocked at both ends by sheetpile and timber dams so work could proceed in the dry. Care had to be taken in deepening the passage of a live sewer main only a few feet below the new concrete floor, with its granite runway for the sliding gate. The sewer, which discharged into Canada Basin, was extended 1,100 ft to the river wall of Canada Quay.

Before it was demolished, the old Canada lock was blocked with ship caissons at both ends and used as a dry dock for construction of the caissons for the Brocklebank passage and for one of the three in the new lock. It was then flooded and the caissons floated out.

Work began on the project in January, 1950. The lock is scheduled to be in use at the end of 1960, and the final work—widening of Langton Quay—will be completed in 1963. Cost is estimated at $45 million.

All design and construction is being done by Mersey Docks and Harbor Board personnel under Chief Engineer J. D. J. S. Saner.

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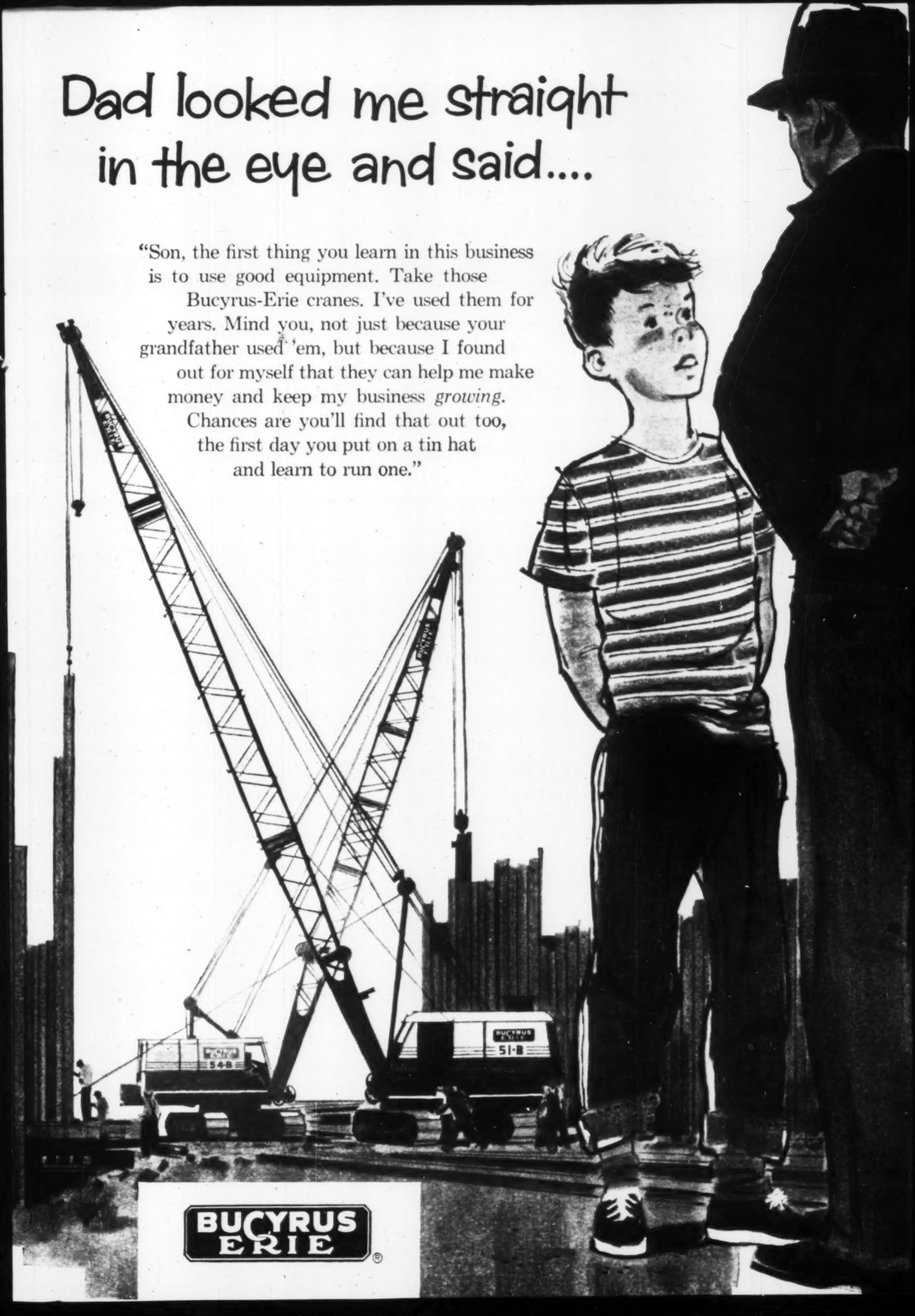
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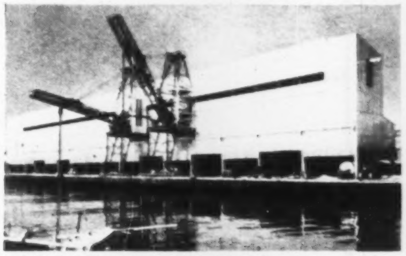

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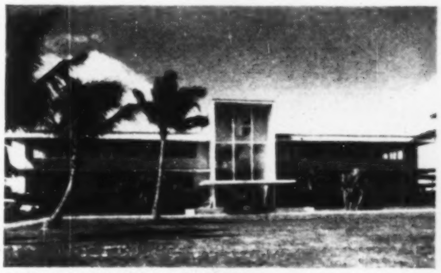

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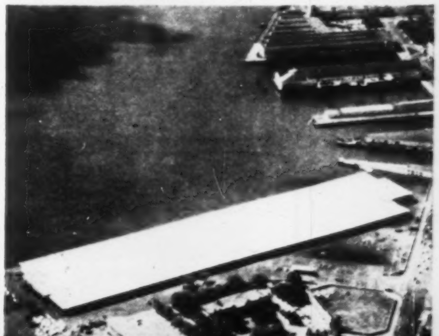

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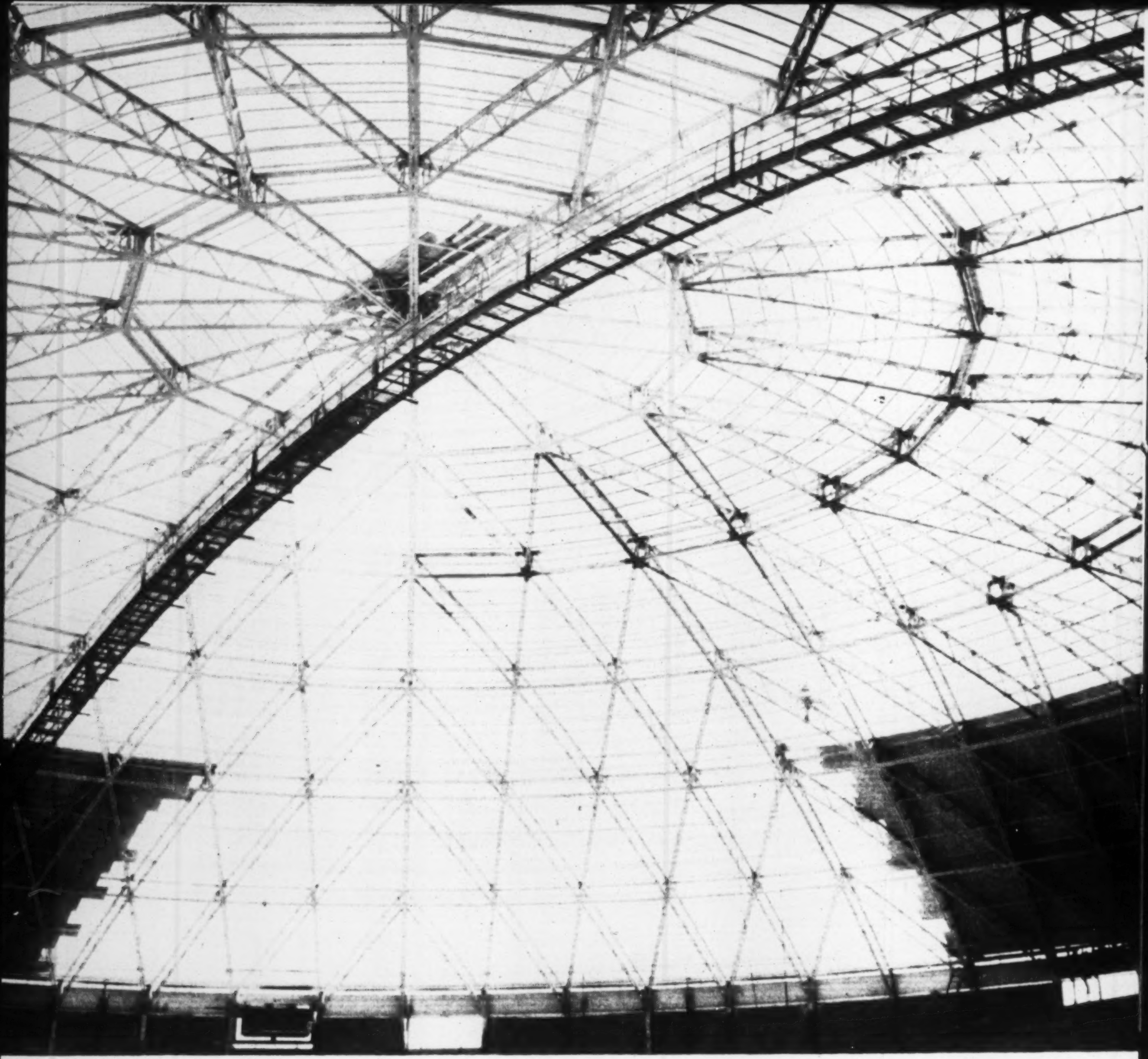


Arena's Skew-Framed Dome Spans

The drum-shaped Brown County Veterans Memorial Arena, constructed in Green Bay, Wis., has a 270-ft-dia dome roof with skewed steel framing. Ribs are trussed and interlock to form diamond shapes.

The arena provides seating capacity and floor space for conventions, expositions, athletic contests and concerts; its roof is high enough so aerial acts can maneuver freely. Facilities are incorporated for ice skating and professional shows. There are no interior columns.

The architect for the arena decided on a circular building, 270 ft in diameter, to focus attention on the center of the floor.

Permanent seats rise 34 ft 9 in. above the main floor and accommodate 3,844 persons. An additional 2,000 portable chairs are available. The clear height at the exterior wall is 39 ft 9 in.; height at the center, 75 ft.

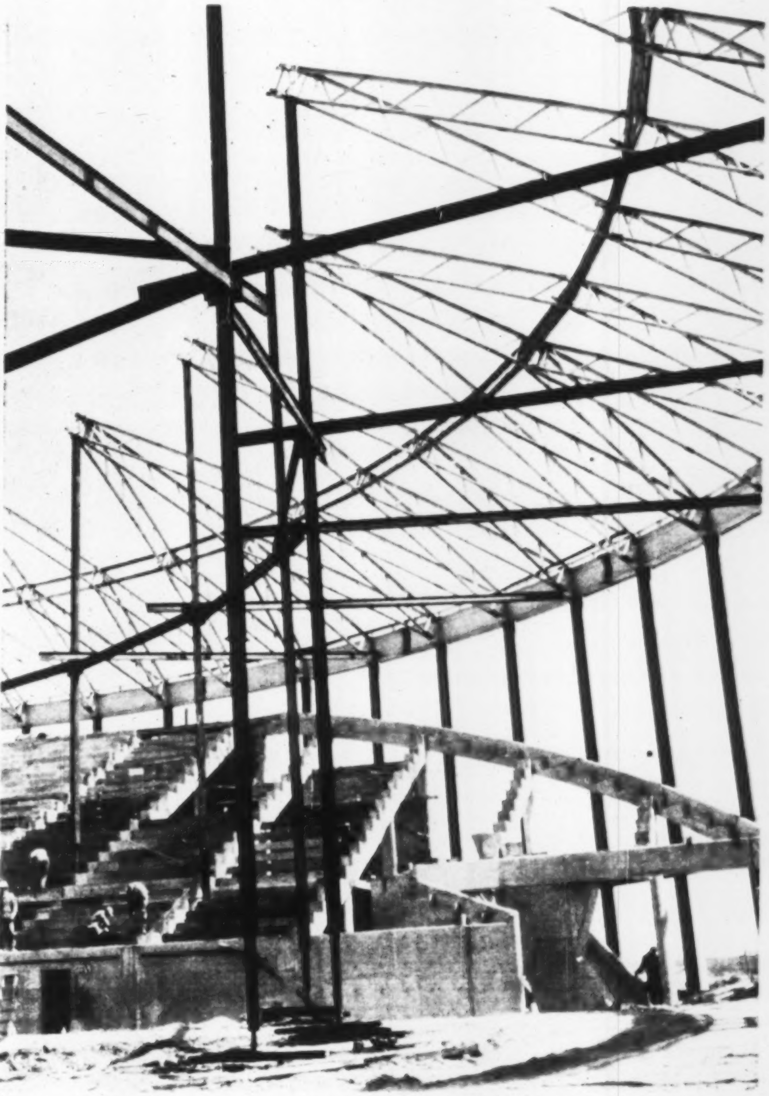
The architect chose skewed structural steel framing for the dome for economy. The results bear out his judgment: Roofing an area of 57,400 sq ft without interior columns required steel weighing only 12.3 lb per sq ft.

An added dividend results from the diamond-shaped pattern of the exposed steel framing. The trussed ribs, forming a line, lace-like appearance, give an interesting architectural effect.

Columns on the periphery of the building have been spaced under each rib. This arrangement accomplishes two things: It eliminates vertical bending stresses in the tension ring; and it gives better architectural effect to the exterior of the building.

By Gene T. Eberle *who wrote this article when he was district engineer for the American Institute of Steel Construction in Milwaukee. Mr. Eberle is now sales engineer for Worden-Allen Co., Milwaukee steel fabricator.*

Roof deck is 2 in. of gypsum cast on form board.



Trussed ribs were supported on steel falsework during erection.

270 Feet

The columns are covered with 20-ga stainless steel. This contrasts nicely with the green insulated panels forming the exterior walls of the building.

• **A ring at a time**—Another innovation was the erection sequence. The erector decided it would be less expensive to erect a complete ring at one time—starting at the tension ring and working upward and inward to the compression ring.

In other similar structures, one complete pie-shaped section has been erected at a time.

Previously also, timber posts have

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been used as temporary supports during erection. The erector chose to use steel falsework columns because of the high salvage value. These temporary supports consisted of straight sections with a minimum of punched holes. When the sections had served their purpose, they were reclaimed with almost complete success.

First, horizontal braces were welded in a circle around the line of temporary columns at the level of the structure's tension ring. Then crews added radial braces extending from each column out to the tension ring.

Erection of the dome framing required 373 hours with cranes and 3,625 hours for labor. To weld the compression ring and the skewed steel required 1,170 hours of welding and 924 hours of labor, including placing and moving scaffolding and clearing slag from the welds. A total of 3,510 lb of welding rods were used.

The skewed ribs consisted of fabricated steel trusses 2 ft 6 in. deep, made up of pairs of angles. All chord members are curved to a 270-ft radius. All webs are two angles 1¾ x 1¾ x ¼ in. Chord sizes varied with the spans; the highest stressed ribs had a top chord consisting of two angles 4 x 4 x ⅜ in. and a bottom chord of two angles 4 x 3 x 5/16 in.

• Builtup rings—The tension ring, a builtup I-section 34½ in. deep, consisted of a pair of angles 6 x 8 x ¾ in. for top and bottom flanges and a web plate 34 x ¼ in. The web had bar stiffeners on one side spaced about 3 ft c-c.

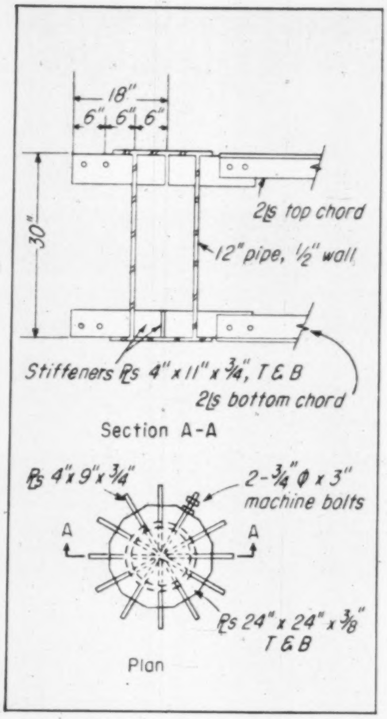
The compression ring was built up of 30-in.-long 12-in.-dia pipe with ½-in.-thick walls and top and bottom cover plates 24 in. across, ⅜ in. thick. To receive the main ribs, twelve plates 9 x 4 x ¾ in. were welded to the outer shell at top and bottom to form a spider. Two ¾-in.-dia machines bolts were used as field connections to each of these spider plates.

The roof is a 2-in. gypsum deck cast on a 1-in.-thick form board, which was left in place. This board, selected for its acoustical properties, rests on bulb tees.

These were spaced to minimize cutting of the board and to maintain the pattern of the dome.

The tees were set in concentric circles. The lower ones, continuous over the ribs, were bent about both axes to preserve the shape of the roof. This was accomplished by welding one end of each tee to a rib and then forcing it to proper shape, following up with welds at each rib.

Since the curvature increases as the ribs near the center, the tees about halfway up were handled somewhat differently. Their flanges were flame cut, V-notched, bent and then welded to the supports. Finally, the tees adjacent to the crown were made up of short, straight sections, simply supported. With this erection procedure, there was no fracture of the welds, a minimum of cutting and fitting of the form board was needed and the concentric pattern of the dome was maintained.



COMPRESSION RING at dome crown was connected to top and bottom chords of ribs with two machine bolts.

The arena provides facilities to meet the needs of the people in the Green Bay area. The ice rink is 200 x 85 ft, making it one of the largest in the country. A sheet of ice can be formed in eight hours.

There is also a removable hardwood floor and other portable equipment for basketball, boxing, stage shows, hockey, and expositions.

Facilities for parking 1,000 cars have been provided adjacent to the structure. There are accomodations for an additional 6,000 spaces across the street from the arena.

John E. Somerville Associates, Inc., Green Bay, Wis., are the architects and performed all the engineering with the exception of the design of the skewed-frame dome.

G. K. Kiewitt and Louis Bass, of Webster Groves, Mo., designed the dome. Smith-Moon Steel Co., Inc., Winfield, Kan., and Northeastern Boiler & Welding, Ltd., Green Bay, Wis., are the fabricators and steel erectors. The general contractor is Conrad Hamann, Manitowoc, Wis.

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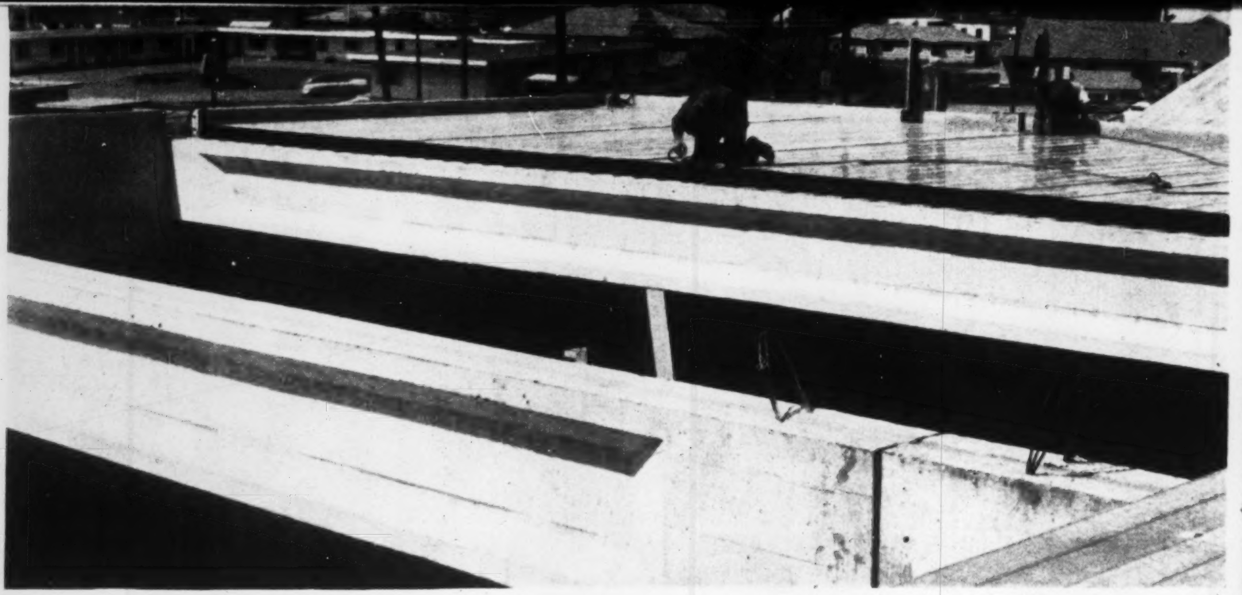


Steel roof deck over cold storage building acts structurally as a diaphragm for lateral loads.

Alternate Designs Pay Off in Low

Thirteen types of roof construction were considered for a cold-storage warehouse to be built in Corvallis, Ore. Objective: the lowest possible building cost. Bids came in for as low as $8.50 per sq ft on the lowest-cost alternate design, which was chosen for the job.

The warehouse, for Modern Freezing and Storage, Inc., was built last year in four months to meet a deadline for the heavy load of freezing business during summer months.

Four bids on the cold storage building, less mechanical work, ranged from $8.50 to $9.61 per sq ft. Bids on an alternate—an adjacent dry storage area—ran from $3.95 to $4.50 per sq ft. These were considered reasonable for the type of fire-resistant construction involved in the design.

The final selection was long-span light-gage steel decking on prestressed concrete beams, with cast in place concrete columns and footings. Concrete columns were selected for their resistance to mechanical damage, their superior fire rating (compared to steel columns), and their reasonable cost. (The owner believed that one row of columns spaced 21 ft apart in the center of the storage areas would not substantially hamper his handling operations, but would provide a low-cost, fire-resistant building.)

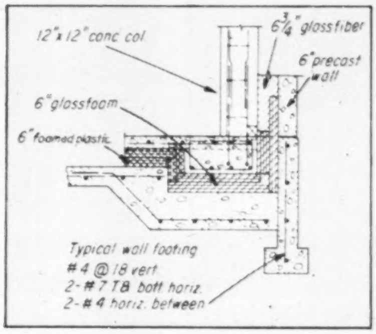
The basic building is 104x107 ft in plan. It has a minimum ceiling height

How Initial Costs of Alternate Roof Constructions for Cold-Storage Area Compare

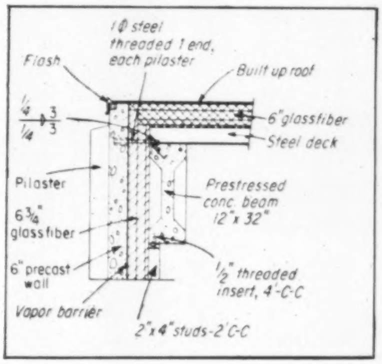
(First figure is for 52 ft span system. Second figure is for 104 ft span system.)

COMPONENTS	GENERAL DESCRIPTION												
	Wood Trusses, Joists, Deck (1)	Wood Beams, Joists, Deck (2)	Wood Beams, Steel Deck (3)	Wood Beams, Steel Joists, Deck Insul. (4)	Concrete Beams, Precast Deck (5)	Concrete Beams, T-Slab Deck (6)	Concrete Beams, Steel Deck (7)	Longspan Steel Joists, Steel Deck (8)	Longspan Steel Joists, Insul. on T-Rails (9)	Steel Girders, Deck (10)	Steel Girders, Joists, Insul. on T-Rails (11)	Steel Trusses, Deck (12)	Steel Girders, Joists, Insul. Deck (13)
Timber Trusses, Bowstring	$6,200, 8,400	$	$	$	$	$	$	$	$	$	$	$	$
Glued Lam. Wood Bms.		9,300, 20,500	8,900, 20,500	8,500, 19,900									
1-in. Wood Sheathing	4,600, 4,600	4,300, 4,300											
Wood Roof Joists	7,800, 7,800	7,500, 7,500											
Wood Ceiling Joists	3,600, 3,600			1,400, 1,400							1,400, 1,400	1,400, 1,400	1,400, 1,400
Prestressed Conc. Bms.					14,900*	12,900, 23,300	10,100, 19,100						
Precast Conc. Roof Slabs					46,600*								
Conc. T-Slabs						35,300, 35,300							
Conc. Tilt-up Walls	14,800, 14,800	16,800, 18,100	16,800, 18,100	16,800, 18,100	16,600*	15,600, 17,400	17,000, 18,400	16,500, 18,100	16,500, 18,100	16,400, 17,900	16,400, 17,900	14,800, 14,800	16,400, 17,900
Columns	860, 0	860, 0	860, 0	860, 0	1,500*	1,200, 0	860, 0	860, 0	860, 0	860, 0	860, 0	860, 0	860, 0
Lngspan Stl. Joists								17,600, 36,500	17,600, 36,500				
Std. Stl. Joists				13,400, 13,400							7,300, 7,300	4,900, 4,900	13,400, 13,400
Stl. Girders										13,300, 30,000	13,300, 30,000		12,000, 27,800
Stl. Trusses												9,400, 17,100	
Stl. Bms. at Column Line								1,700, 0	1,700, 0				
Std. Stl. Deck								11,800, 11,800					
Longspan Stl. Deck			19,600, 19,600				19,600, 19,600			19,600, 19,600		20,600, 20,600	
Stl. T-Rails									8,200, 8,200		8,200, 8,200		
Asbestos Cement Board Ceiling	7,800, 7,800	7,800, 7,800		7,800, 7,800							7,800, 7,800	7,800, 7,800	7,800, 7,800
Roofing	3,800, 3,800	3,600, 3,600	3,600, 3,600	3,600, 3,600	3,600*	3,600, 3,600	3,600, 3,600	3,600, 3,600	3,600, 3,600	3,600, 3,600	3,600, 3,600	3,800, 3,800	3,600, 3,600
Extra Insul. & Vapor Seal	2,000, 2,000	3,500, 5,700	3,500, 5,700	9,500, 11,700	4,900*	3,100, 6,200	3,700, 7,200	2,900, 5,700	8,900, 11,700	2,700, 5,300	8,700, 11,300	2,000, 2,000	8,700, 11,300
TOTAL	51,500, 52,800	53,700, 67,500	53,300, 67,500	61,900, 75,900	88,100*	71,700, 85,800	54,900, 66,900	55,000, 75,700	57,400, 78,100	56,500, 76,400	67,600, 87,500	65,600, 72,400	64,200, 83,200

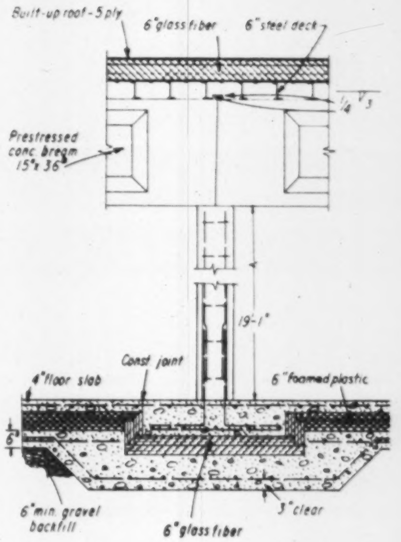
*104-ft. span not practical or economical


12"x 12" conc col
6¾" glass fiber
6" precast wall
6" glassfoam
6" foamed plastic
Typical wall footing
#4 @ 18 vert
2-#7 T.B. bott. horiz.
2-#4 horiz. between

Insulation wraps under walls . . .


1 Ø steel threaded 1 end, each pilaster
Flash
Built up roof
¼
3
3
¼
6" glassfiber
Steel deck
Pilaster
6¾" glassfiber
Prestressed conc. beam 12"x 32"
6" precast wall
½" threaded insert, 4'-C-C
Vapor barrier
2"x 4" studs-2' C-C

and over roof frame and deck, too.


Built-up roof - 5 ply
6" glass fiber
6" steel deck
¼
3
Prestressed conc. beam 15"x 36"
19'-1"
Const. joint
4" floor slab
6" foamed plastic
6"
6" min. gravel backfill
6" glass fiber
3" clear

Columns get the same treatment.

Cost Job

of 18 ft and a ¼-in.-per-ft roof slope. Design temperature is −5F.

A similar (opposite hand) adjacent building with one common wall was included as an alternate, without wall and roof insulation, to be used as dry-storage area until the owner required additional cold-storage facilities. This alternate was not built, but provisions were made for its future construction.

• Several types of insulation—Insulation materials used varied with location:

The building floor consists of a 6-in. reinforced concrete slab on which 6 in. of expanded-polystyrene insulation was laid. Interior column footings were constructed in two layers, with the upper separated from the lower by a 6-in. layer of rigid cellular-glass insulations selected for its compressive strength. A 4-in. reinforced concrete slab was then placed over all floor insulation. (The floor was designed for a live load of 800 psf stored goods or a loaded lift-truck axle load of 10,800 lb.)

The floor is underlaid with 6-in. concrete drain-tile lines 8 ft apart. These lines transmit air by gravity or forced draft along the under side of the lower floor slab. The relatively warmer air prevents freezing of the subgrade and subsequent heaving of the floor. Five thermocouples were placed at locations 6 in. below the slab to indicate the temperature gradient across (and under) the floor. These may also indicate when forced and heated air are required through the tile lines.

Walls, starting on the outside, consist of 6-in.-thick precast concrete panels, a vapor barrier and then the main insulation barrier. Inside, wood studs and hard facing protect the insulation.

Precast concrete walls were selected because of freedom from painting and other maintenance—a first cost comparable with reinforced block masonry—and because of lower fire insurance costs.

Wall insulation consists of two layers of 3-in. glass fiber board faced with ¾-in. glass-fiber board that was white enameled on one side for light reflection, appearance and ease in cleaning. The insulation was placed over a double aluminum-foil vapor barrier.

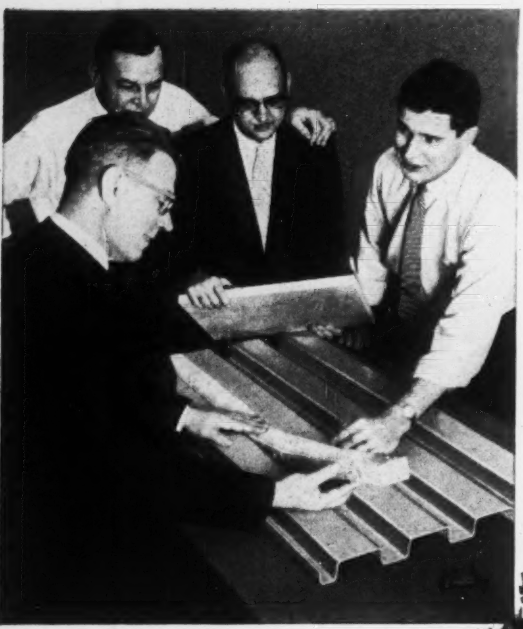
Insulation is held in place with wood skewers, and the facing is clipped to 2 x 4 wood studs, which are 2 ft c-c and extend the full wall height. Stud panels were made up in two sections, placed one above the other and bolted together.

They were strapped on their face edges across the joint with a galvanized sheet-metal strip to slightly prestress the thin panels against outward deflection. The use of wood studs or other combustible framing does not penalize the fire rating of the total structure so long as the combustible construction does not exceed 25 per cent of the total wall.

Comparison of 25-Year Costs of Seven Alternate Constructions

	ALTERNATES						
	(1) 104 ft*	(2) 52 ft	(3) 52 ft	(7) 52 ft	(8) 52 ft	(9) 52 ft	(10) 52 ft
A. Difference in first cost	$ 0	$ 900	$ 500	$2,100	$2,200	$4,600	$3,700
B. Difference in financing first cost (interest)	0	700	400	1,600	1,700	3,500	2,800
C. Difference in 25 years insurance on building	5,300	5,400	3,600	0	500	600	500
D. Difference in 25 years insurance on contents	11,000	11,000	7,000	0	1,250	1,250	1,250
Total A plus B plus C	$ 5,300	$ 7,000	$ 4,500	$3,700	$4,400	$8,700	$7,000
Total A plus B plus C plus D	$16,300	$18,000	$11,500	$3,700	$5,650	$9,950	$8,250

*Wood bowstring trusses were considered for 104-ft span only, since 52-ft span trusses saved only about $1,300 and added roof drainage and appearance problems.



Pre-cut sound absorption batts of inert fiber fit into the 2⅜" rib-openings of Acoustideck, under cover of 1" rigid board insulation. Standard methods are used to apply bonded roofing.

Because the acoustic perforations are in vertical webs only, the possibility of dusting is completely eliminated. Spans to 10 feet are practical with Acoustideck.

ARCHITECTS:
Durrant & Bergquist
Dubuque, Iowa
Boscobel, Wisconsin

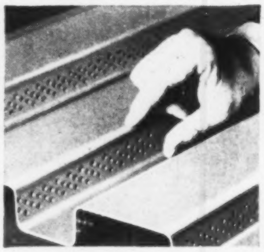
Milcor Acoustideck cuts cost on roof and ceiling for school

Acoustideck serves as *both* roof deck *and* acoustical ceiling of modern, fluted design. It goes up fast in any weather, saves on structurals, helps earn favorable insurance ratings.

Tests by Armour Research Foundation show that Acoustideck has a Noise Reduction Coefficient of .70. This satisfies the requirements of classrooms, gymnasiums, tank rooms, offices, industrial plants, and other noise-problem areas.

Acoustideck is Bonderized, then flow-coated with a prime coat of epoxy-resin enamel, oven-baked to abrasion-resistant hardness. It is available also in galvanized steel and aluminum.

See Sweet's Architectural File, section 11a/In — or write for catalog 241.



With Acoustideck, spans to 10 feet are practical. Acoustic perforations are in vertical webs only, where load-carrying ability is affected least.

MILCOR® Acoustideck

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ceiling, and partition surfaces. (Note that the floor is excluded.)

• What estimates showed—Thirteen types of wood, steel or concrete roof construction were considered for both 52-ft and 104-ft spans, as shown in Table 1. Estimates were made for each type and combination, with differences in first cost of their construction as the end result.

To the types considered most favorable from the standpoint of first cost and operating efficiency were added the interest on the difference in financing first cost and the estimated 25-year fire insurance costs for building and contents (contents are generally insured by their owners, not the building owners, but such costs affect both). Maintenance (primarily paint) was also considered in final choice.

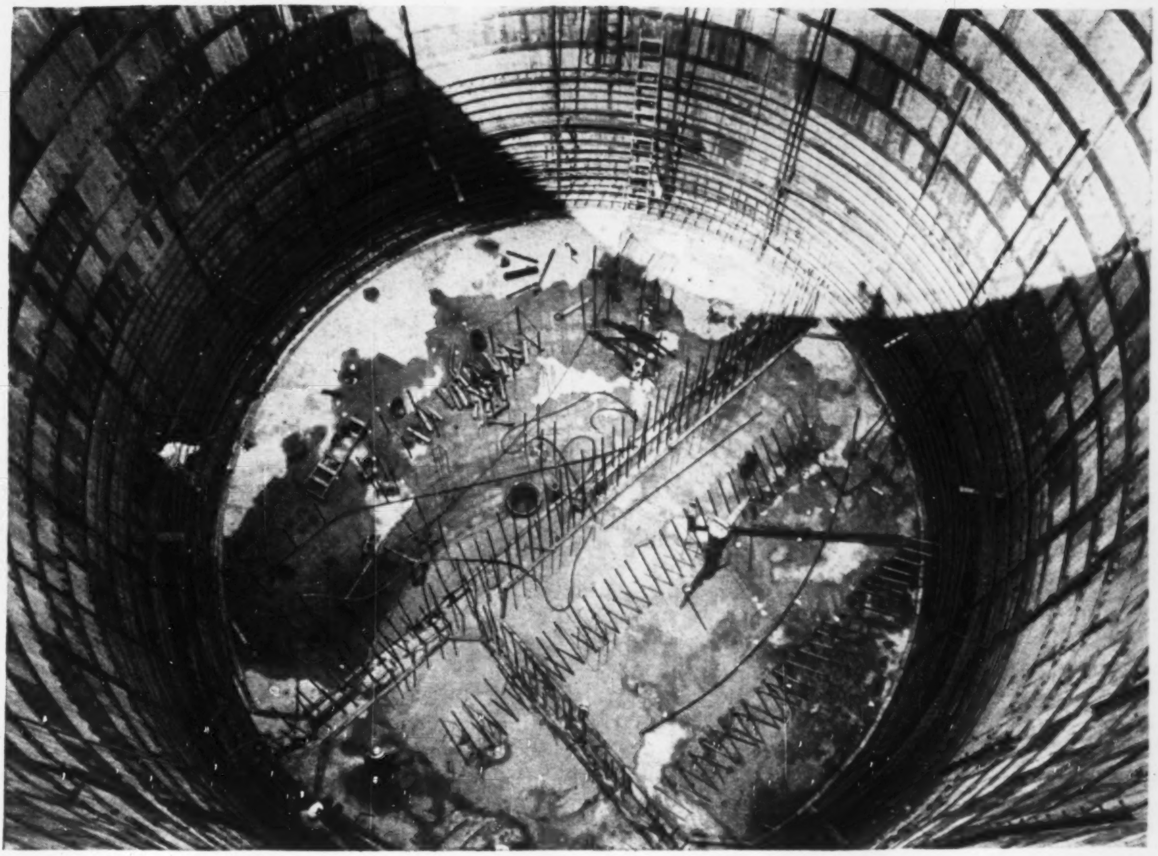
• Light, metal roof deck—The galvanized steel decking serves as a diaphragm for lateral loads. Simple-span decking lengths are welded to steel strips embedded in the tops of the prestressed beams. Vertical shear plates between beams and decking ends are welded to the same strips. The welding pattern between adjacent edges of decking further develops the surface as a diaphragm. The steel decking is produced by a Pacific Northwest manufacturer and is competitive with other span systems.

The steel roof deck is entirely inside the building insulation. The only structural members that pierce the wall insulation are the prestressed beam ends and 1-in.-dia steel rods for lateral forces between prestressed beam edges and the exterior walls. Openings in walls for beams were dry-packed and calked with a polysulfide sealer.

Three courses of glass-fiber roof insulation, each 2 in. thick, were placed on top of the steel roof deck. The first layer was fastened with steel clips driven through insulation and deck. These clips were quickly applied, and the necessity of mopping the first insulation course to the steel deck was eliminated. (Mopping had proved to be a fire hazard in some previous constructions.

A built-up roof was laid over the roof insulation. Because the roof edges were subject to wet weather during construction, a 48-in. aluminum-and-plastic vapor seal was inserted to join wall vapor seal to roof construction.

All design work and construction supervision was by the writer's firm, except mechanical equipment and layout designed by the The Thermal Engineering Division, Monroe Food Machinery, Inc. General Contractor was W. H. Shields Construction Co., Eugene, Ore.



New open shaft, ring waler construction bottoms-out in 29 days

Open shaft construction made possible through the use of COMMERCIAL steel ring walers is proving to be an important boon to time-conscious contractors concerned with sub-grade foundation jobs. Another typical case in point is the foundation for the East Nine Mile Pumping Station in the City of Warren, Michigan.

72-FT. DEEP EXCAVATION is shored by 24 nine-segment COMMERCIAL steel ring walers and wood lagging.

Sunk in hard ground of stiff, moist blue clay, the lined open shaft for the foundation—72′ deep with an inside diameter of 55′ 10″—was bottomed-out and concreted by the Greenfield Construction Company in just 29 days. And according to James F. Peters, Field Engineer for Greenfield Construction, "COMMERCIAL steel ring walers, and the open shaft construction they made possible, were a most important factor in the on-schedule completion of our foundation project."

Unusual? Definitely yes when you consider that caisson-type construction used for foundations in this area in the past has frequently involved delays of months and even years because of soils too hard to allow caissons to pass.

Field Engineer Peters commented, in fact, that, "The ground on our particular project was so hard that I feel if we had used a caisson as originally planned it would have 'hung up' at a depth of approximately 25 feet."

The use of COMMERCIAL steel ring walers also eliminated the need for outside forms on the concrete for the project since the rings (set 3′ center-to-center) and wood lagging served as a form. The close tolerance fabrication (dimensions to + or – 3/8″) of the walers, their easy handling, and still easier installation, not only helped speed progress on the job but involved the services of only four men for actual installation.

For the full story on how COMMERCIAL steel ring walers can work to your time-saving advantage on open shaft or open pit construction for foundations—whether they be large or small—be sure to send for your copy of descriptive Bulletin 300-P1. Address inquiries to Commercial Shearing & Stamping Co., Dept. E 38, Youngstown 1, Ohio.

COMMERCIAL
shearing & stamping

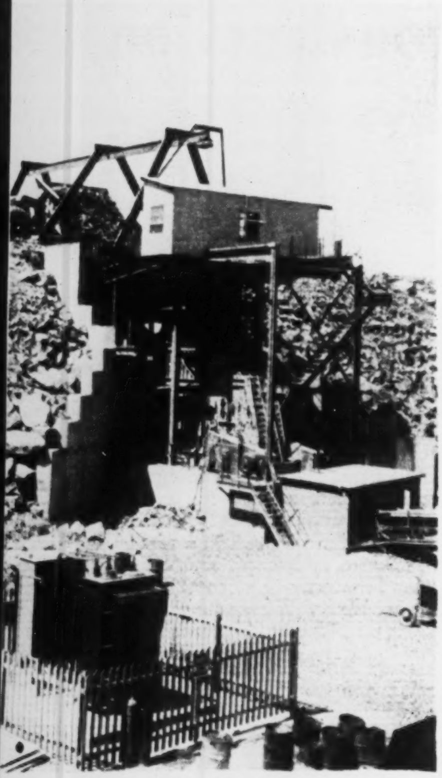
1. Aggregate stockpiles at Niagara Power Project can store up to 550,000 tons. This is the

Biggest Aggregate

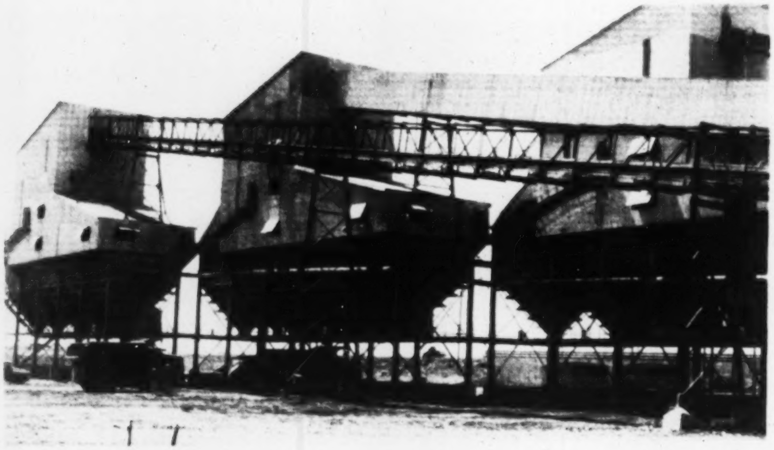
The biggest aggregate plant ever built for a construction job is turning out 2,000 tons of crushed stone and sand an hour at Niagara Falls. The plant is big because it will have to produce all the material—seven million tons of aggregate and three million tons of sand—for the State of New York's $700-million Niagara Power Project.

As the only source of supply, the plant has some aspects of a supermarket operation. With four different contractors holding the major work contracts, things would be hectic if they all lined up for material at once.

To avoid jams the New York State

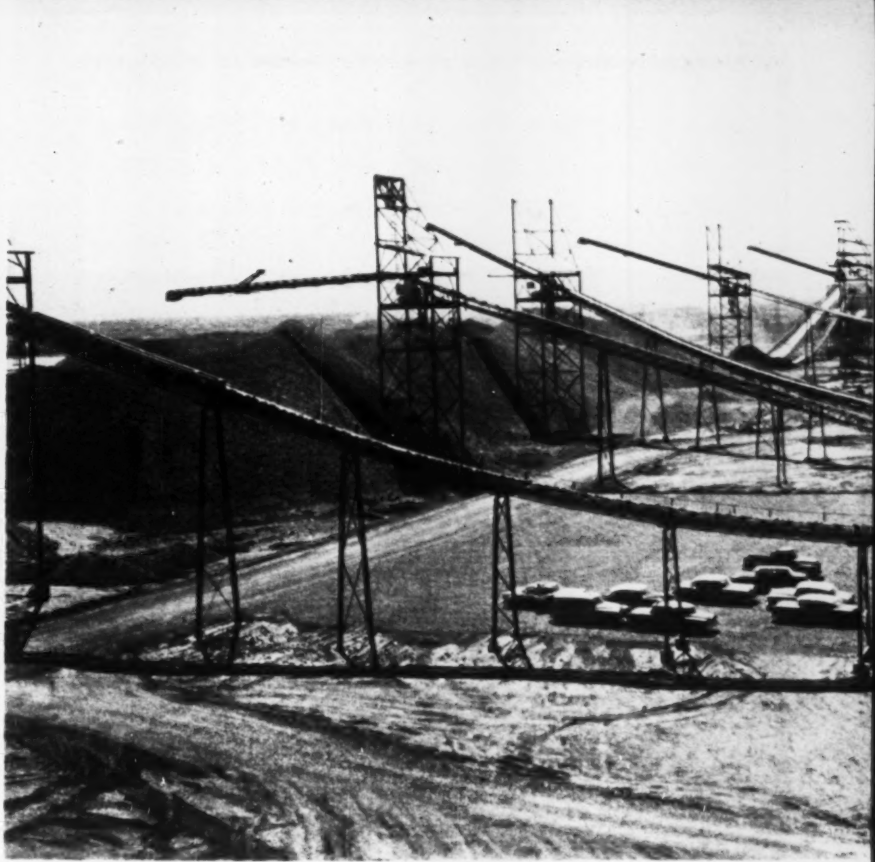


3. Primary crushers handle big rock.



4. Three loading towers deliver aggregate and sand to trucks.

project's only supplier.



2. Material is moved on almost two miles of belts in 21 conveyors.

Plant Grinds It Out at Niagara

Power Authority set up an ordering system for the contractors. Each must estimate his requirements on a monthly basis. He makes another estimate a week before delivery. The Power Authority, through its engineers, Uhl, Hall & Rich, coordinates the orders and schedules deliveries to keep traffic moving smoothly. In the event that demand temporarily outruns supply, the authority will determine delivery priorities.

• Channel cut supplies raw rock—Channel Constructors, a combine sponsored by Peter Kiewit Sons' Co., Omaha, operates the plant. The joint venture group also has the contract for excavation of the open channel between the two power generating plants.

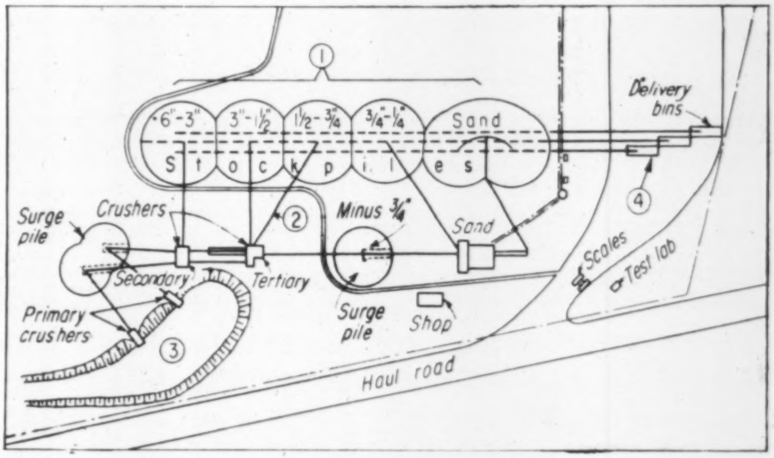
About half the rock taken from the 500-ft wide, mile-long cut will be used for production of sand and stone.

The aggregate plant, located near the excavation, is the hub of a network of construction roads used by the contractors to haul aggregate to their own concrete plants.

The same roads are used to haul overburden to the Tuscarora reservoir for use in construction of the reservoir embankments.

• Like two parallel plants—To get the production rate required, Channel Constructors built a plant that is almost two-in-one, with equipment duplicated along most of the production line.

Rock from the excavation is hauled in 30-ton side-dump trucks and dropped into one of two primary crushers. The crushers handle rock up to 5 ft in size and break it to less than 6-in. size. A conveyor under each crusher carries the material to a 40,-



Numbers on layout correspond to numbered photos.

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TG-5805

. . . Aggregate plant

000-ton surge pile. Two conveyors in concrete-lined tunnels under the pile carry the rock to the secondary-crusher building. Here double-decked vibrating screens remove all stone larger than 3 in. and deposit it on conveyors discharging on an 85,000-ton storage pile.

Material passing the screens is broken into sizes between 3 and 1½ in. by two cone crushers. Conveyors carry this stone to the tertiary crusher building where another set of double-deck vibrating screens takes off material above 1½-in. size. This size stone is carried by conveyor to a second 85,000-ton storage pile.

Stone passing the screens is broken to sizes below 1½ in. in two cone crushers. Material bigger than ¾ in. is screened out and routed to a 100,000-ton storage pile.

• Sand plant is similar—Production facilities are parallelled in the sand plant also. Each line consists of four double-deck vibrating screens, two sand screw classifiers, two sand scalping tanks and a rod mill.

All material between ¾ in. and No. 4 (¼-in.) sieve sizes is screened off and moved by conveyor to a 100,000-ton stockpile.

Everything passing the No. 4 screen drops into the classifiers where the excess fines are removed before moving into the scalping tanks. Here all material below 200 mesh and the suspended silt is removed. Graded sand goes to a 180,000-ton stockpile.

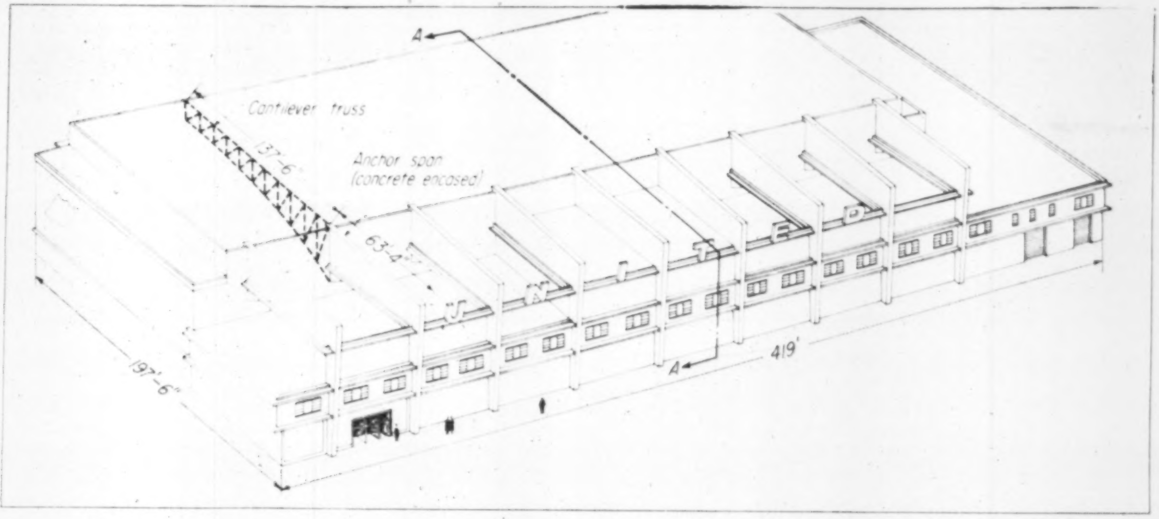
A transfer tower gives control over the quantity of minus No. 4 material produced. Some of the ¾-in. to ¼-in. size is intercepted on its way to the stockpile and returned to the rod mills for reduction below ¼-in. size. This material is then started through the classifiers also.

Conveyors 1,500 ft long run under the storage piles to three delivery towers. The 8-ft-high conveyor tunnels are lined with steel plate set on concrete floors. Each tower has five hoppers to receive the various size aggregates separated by screens in the tower.

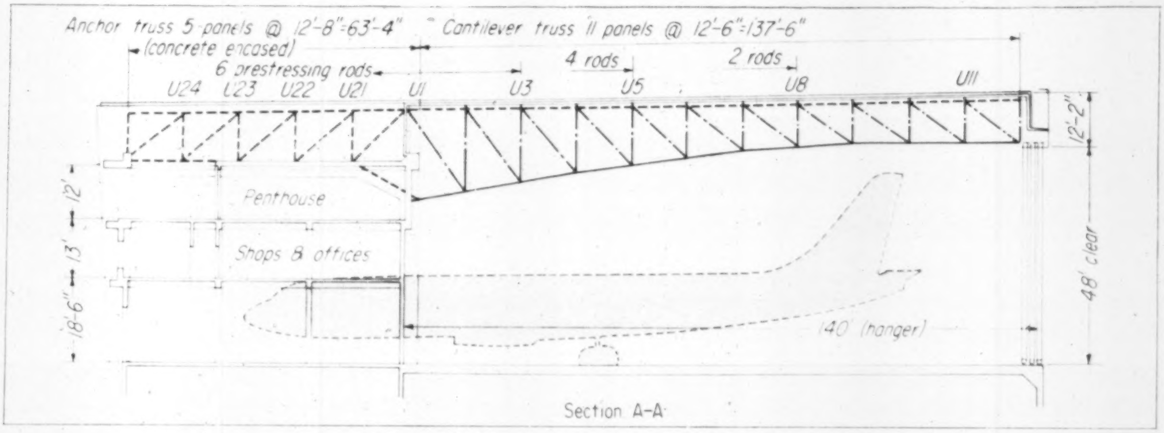
During peak production in the summer, the plant works on two shifts to turn out 30,000 tons daily. As concreting slows down with the approach of winter, the plant will rebuild its stockpiles to the maximum storage capacity of 550,000 tons.

Production at the plant is expected to go until 1961.

Lee Rowe is project manager for Kiewit. Other firms in the combine are Perini Corp., Framingham, Mass.; Walsh Construction Co., New York City; and Morrison-Knudsen Co., Inc., Boise, Idaho.



Steel cantilever trusses tie to anchor spans above hangar shops for Chicago's O'Hare Field.



Prestressing rods are arranged to provide maximum support at root of cantilever truss.

Prestressing Steel Trusses Cuts Cost

Prestressed structural steel cantilever trusses will carry the roof of a hangar to be built for United Air Lines at Chicago's O'Hare International Airport. The 415x198-ft structure, on which bids are expected to be taken soon, will service United's Douglas DC-8 Jetliners when they begin operations this fall.

The hangar will have nine roof trusses of 140-ft cantilever span. The door opening along the front will be 362 ft wide and 48 ft high. Two DC-8's can be nosed into the hangar and one DC-7 can be backed in at the same time for service. The design provides for extension and enlargement in the future with minimum changes.

By Paul Rogers *president of Paul Rogers and Associates, Inc., Chicago. His firm was the engineering consultant for this jet hangar job.*

Total floor space provided in the hangar area is 53,440 sq ft. This large area, to be enclosed and roofed without columns on three sides, called for new concepts in structural design.

• **Prestress savings**—While several solutions have been used for similar hangars, this one is believed one of only a few in this country to utilize prestressed steel construction. Prestressing the nine trusses brought an estimated savings of $35,000, as compared with conventional cantilever truss design.

Other advantages of prestressing the 140-ft cantilever trusses is reduction of structural steel quantities. Secondary stresses are eliminated or minimized, and deflections are considerably smaller.

Since creep, or plastic flow, is practically nil for structural steel, there is no need for making allowances in the stresses of the prestressing rods.

• **Anchor spans**—The nine trusses are spaced 40 ft c-c. The cantilever portion of each truss comprises eleven 12-ft 6-in. panels. The anchor portion of each truss composed of five 12-ft 8-in. panels, is encased in concrete 2 ft thick.

Anchor trusses extend across an adjoining two-story plus penthouse reinforced concrete structure containing offices, shops, classrooms, cafeteria and air line personnel sleeping quarters. This 64-ft wide portion of the building extends completely across the rear of the hangar area and acts as an anchorage for the roof trusses.

In addition to the dead load, the trusses are designed to resist a live load of 25 psf acting downward and a wind load of 40 psf upward.

The three-story service building also extends across one side of the hangar area, with an over-all of 52 ft.

(*Turn the page*)

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at the first breath of danger
by the unique Rate-Compensation action
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During those critical moments while temperatures are building up to the ignition point, *only a detector that can actually anticipate fire danger can provide positive protection!*

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Fast-acting Fenwal DETECT-A-FIRE Units located in schools provide positive protection . . . always ready to respond instantly *at the selected protection level.*

ANOTHER EXAMPLE OF HOW Fenwal CONTROLS TEMPERATURE . . . PRECISELY

. . . Prestressed hangar

• Prestressing features—Designs call for each truss to be prestressed with six $1\frac{1}{8}$-in. dia high-strength rods. These tendons are required to have a minimum yield strength of 130,000 psi and a minimum ultimate strength of 145,000 psi.

All prestressing will be done after trusses are erected and before adding the roof. Initial prestress in each rod will be 60,000 lb. After the roof is in place its dead load will increase this stress to 80,000 lb per rod maximum.

The roof is metal deck on rolled-beam purlins, with 2-in. rigid insulation topped with a builtup roofing.

By an overlapping arrangement the six prestressing rods will provide the proper amount of total force required. Anchorages for the rods are heavy plate-and-stiffener assemblies welded to the web and inner flange faces of the 14-in. wide-flange beams comprising the top chord of each truss.

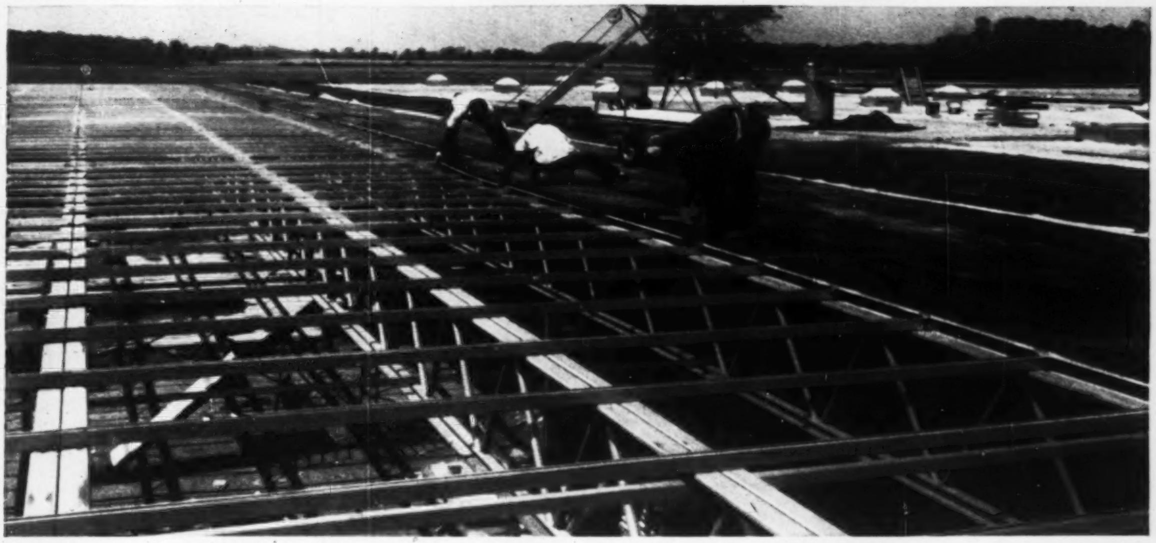
• Anchored in pairs—The $1\frac{1}{8}$-in. rods will be anchored in pairs at the second, third and fourth panel points (U22, U23 and U24) of the anchor trusses (sketch, p. 67). The other ends of the three pair of rods are anchored at the second, fourth and seventh panel points (U3, U5, U8) of the cantilever trusses.

• Reduce stress 50%—At a total prestress of 80,000 lb per rod, design stresses were reduced 480,000 lb in panels U1-U3; 320,000 lb in panels U3-U5; and 160,000 lb in panels U5-U8. These reductions due to prestressing ranged from 25% to 50% of maximum design stresses.

Truss members subjected to prestressing were designed for maximum design stress minus the amount of prestress induced. For example, the maximum design stress in the first top-chord panel (U1-U2) is 1,048,000 lb. Reducing this by the 480,000 lb of prestress in the six $1\frac{1}{8}$-in. rods leaves a net design stress of 568,000 lb tension. This called for a 14-in., 103-lb wide-flange beam.

The hangar will be built by Chicago's Department of Public Works, under the direction of Commissioner George L. DeMent. Construction funds will be provided by the $120-million bond issue approved this spring for the three-year expansion at O'Hare Field (ENR Feb. 26, p. 17; July 3, 1958, p. 40).

Naess & Murphy are general consultants for the entire project. Ragnar Benson, Inc. is the architect for the United Air Lines hangar, and Paul Rogers and Associates, Inc., are the consulting structural engineers. William E. Downes, Jr., is Commissioner of Aviation.



Every phase of the roof deck construction is illustrated in this view: Joists, box section sub-purlins, 2" Tectum plank, built-up roof, gravel coating.

Saved 50% on Sub-Purlins and Erection,
80% on Painting Costs with the

NEW TECTUM® BOX SECTION ROOF DECK ASSEMBLY

Combining pre-painted bar joists, Tectum galvanized box section sub-purlins and factory-finished Tectum roof deck planks, eliminated 80% of normal painting costs for the interior of the new Scott Chemical Warehouse, Marysville, Ohio.

Other major savings were indicated by James Campbell, President, James Campbell Associates, Inc., Engineers and Builders. "We are extremely pleased with the speed with which the new Tectum roof deck assembly was completed. Tectum's new box section sub-purlins are light, easily handled and the space provided between joist and roof deck offers many economies in the hanging of pipe, conduit and other utilities. The new system is a time-saver from every standpoint and the appearance is excellent."

Tectum roof decks insulate, absorb sound, have good structural strength and are noncombustible. In combination with the new Tectum box section sub-purlins, Tectum roof deck assemblies offer many ways to cut costs. Ask your Tectum representative for complete information. New Catalog now available. Tectum Corporation, Newark, O.

9-32

Tectum

Building: Scott Chemical Company, Marysville, Ohio. *Engineers & Builders:* James Campbell Associates, Inc., Marysville, Ohio. *Tectum Erector:* Bard Roofing & Sheet Metal Co., Columbus, Ohio.

Workmen are shown carrying several 34′ long lightweight box sections in the initial phase of the job. The sub-purlins are aligned in position with precision jigs and then fillet welded at each joist crossing.

Welding at each joist crossing provides lateral strength and continuous beam action. Note weld is hidden from view below, by joist.

High speed clips are driven over tongue of plank. Tectum planks span three sub-purlins giving added lateral strength. This operation is quickly accomplished; saves time.

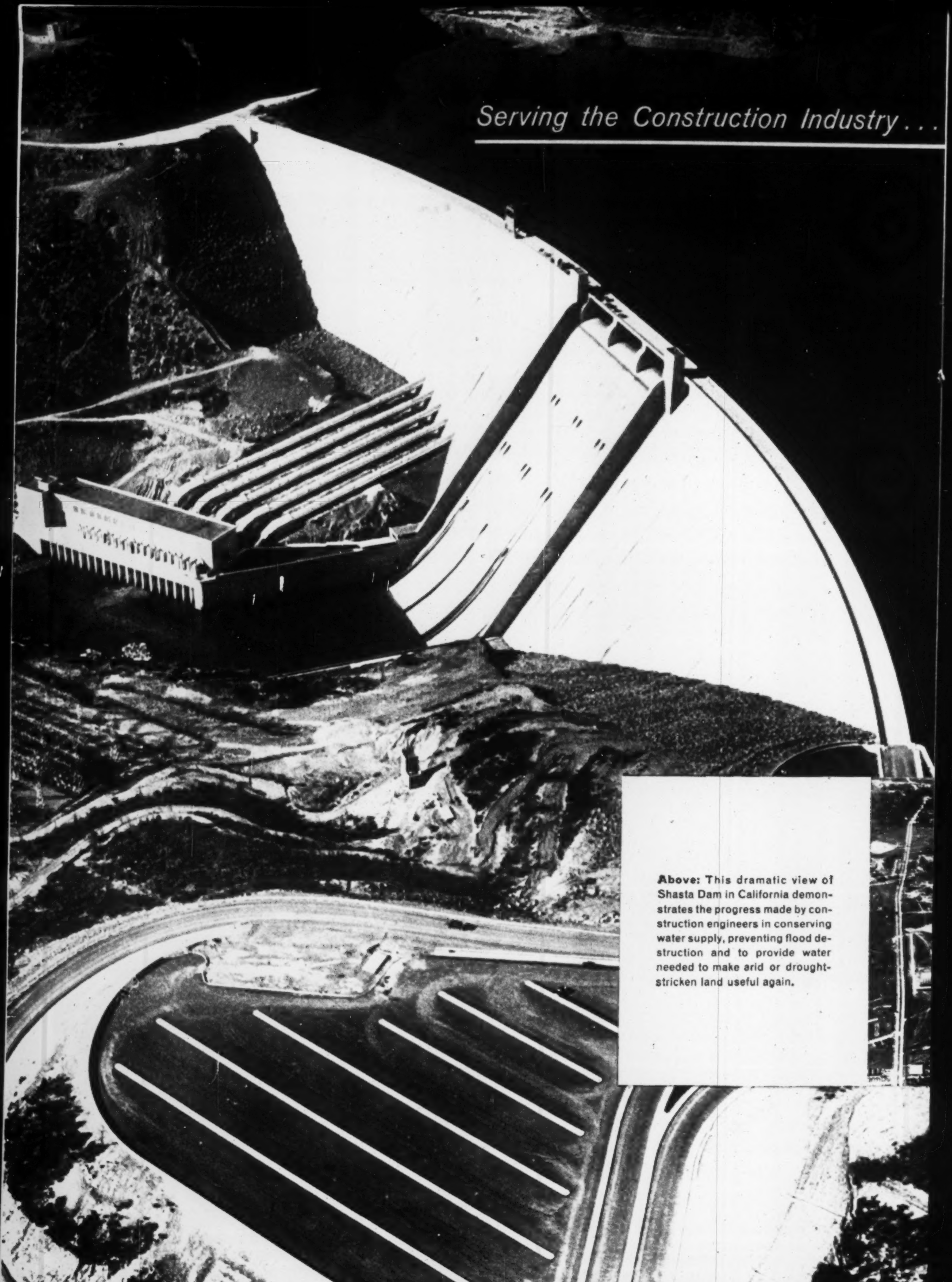
The finished deck is clean, light reflective and maintenance free. Tectum insulates, absorbs sound, is structural and noncombustible in accordance with Federal Spec. SS-A-118b.

In this close-up, the facility with which the sprinkler system was erected indicates a typical time saving advantage of the new Tectum roof deck assembly. An estimated $3000 was saved on the erection of the sprinkler system.

CIRCLE 69 READER SERVICE CARD

CIRCLE 70 READER SERVICE CARD→

Serving the Construction Industry . . .



Above: This dramatic view of Shasta Dam in California demonstrates the progress made by construction engineers in conserving water supply, preventing flood destruction and to provide water needed to make arid or drought-stricken land useful again.

SYMONS® CONE CRUSHERS

produce big tonnages of quality construction materials at low cost per ton

Illustrated here are typical examples of the vast contributions to the progress of mankind being made by the construction industry. Technological advancement in civil engineering of huge construction projects such as these call for rigid specification aggregates, crushed sand and cement. To meet the constantly growing demand for vast tonnages of these quality construction materials, Symons Cone Crushers have long been the first choice of leading producers throughout the world.

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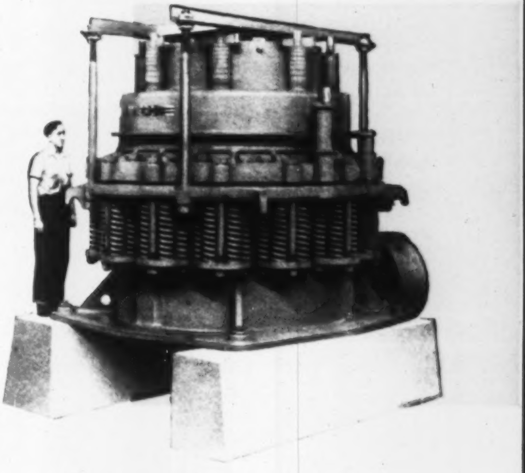
Whether you are a contractor, operator, construction engineer, designer or manufacturer, it will pay you to specify and use Symons Cone Crushers . . . as well as the other Nordberg Machinery for the construction industry . . . *all* designed and built to deliver maximum output at lowest possible cost. *Write for literature.*

SYMONS . . a registered Nordberg trademark known throughout the world



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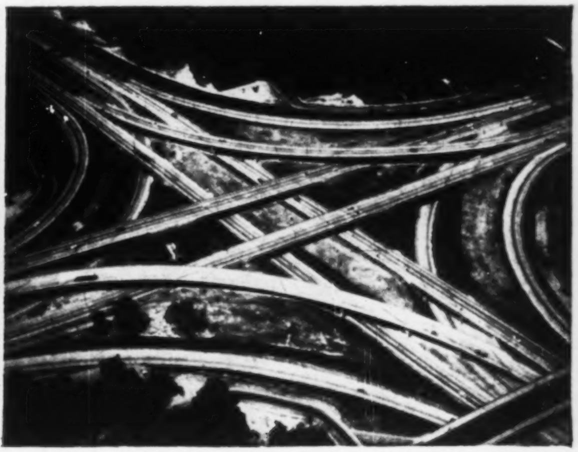

Far left: To meet the challenge of the jet age, engineers and contractors are being called upon to build and expand airport runways to handle the ever-increasing traffic. (View shows Lambert Field, St. Louis).

Left: This view of one of the interchanges on the high speed Detroit expressway is a striking example of the contribution the construction industry is making to the tremendous highway expansion program.

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3rd Quarterly Cost Roundup

Cost Outlook

Costs Will Hold

Construction costs have done just about all the climbing expected of them this year. But this gives the construction industry little reason to be satisfied.

Costs increased during the past 12 months at the fastest clip since the rapid inflation of 1950, following the outbreak of the Korean war.

The ENR 20-Cities Construction Cost Index has risen every month this year, reaching a record of 812.56 in September, based on 1913 costs as 100. This is a thumping 5.1% increase over a year ago. Moreover, it exceeds ENR's forecast that the index would hit 805 by December '59 (ENR Dec. 25, 1958, p. 39).

ENR's Building Cost Index also climbed every month this year. As of September 1, it set a new high of 555.88, based on 1913 = 100. This is an increase of 3.9% over the year-ago value. The latest value exceeds the 550 predicted, as of last December, for the end of this year.

An unexpectedly sharp rise in lumber prices accounts for the somewhat faster increase than was forecast. Wage hikes also were a bit larger than predicted.

For the balance of '59, costs should hold close to their current point, as measured by the ENR indexes. The wage front will be quiet during the next three months because new 1959 wage contracts are inked in the 20 Cities and just about all deferred increases provided for 1959 by long-term contracts have become effective.

On balance, the ENR Cost Indexes shouldn't change much—until 1960. But wary construction men have good reason to be uneasy about prospects for costs next year. Not only will the recent monthly increases in costs affect construction contractors' future selling prices, but there'll be more upward pressures in 1960.

Prime mover for next year's cost push will be wages. Equipment prices are also likely to increase late this year, and rental rates would soon reflect the rise.

It's also quite possible that 1960 will bring increases in cement prices in some areas, higher mill prices of structural steel prices, and increases in aluminum, copper and glass. In fact, lumber appears to be the only soft spot on the materials price front.

Also to be watched carefully is the cost of working capital and equipment loans. Interest rates are still climbing and further increases are likely to come in 1960. Higher money costs add to contractors' cost of doing business. Moreover, heavy demand for bank loans is expected to tighten availability of loans more next year than in 1959. This could mean contractors will be required to keep larger balances of bank loans on deposit at the bank, thus magnifying the impact of higher interest rates on the cost of borrowing needed to carry on construction operations.

The rising cost of capital is even more important to the construction industry because interest charges over a long financing period multiply the final cost of new construction to the buyer. Rising interest costs tend to discourage some potential customers of the construction industry from buying—and customers postpone decisions to award contracts in hopes of getting more favorable financing terms later on, thus realizing big cost savings.

Contractors have been aided in their continuing drive to up productivity by readily available supplies of materials, equipment and manpower. But the prolonged steel strike clouds an otherwise sunny situation.

Shortages of heavy structural steel and plate are likely to upset contracting schedules seriously toward the end of this year and in 1960. Standard structurals and reinforcing bars could also be tight, even though imports can fill a substantial gap in domestic production. Some equipment manufacturers will soon be pinched for steel and this could stretch out delivery waits on new orders placed by contractors late this year and in early 1960.

Thus, the steel strike's effects on job scheduling may drive contractors' selling prices up at a faster clip than prices of basic materials and labor between now and next summer. At best, a steel shortage would cancel out much of the efforts to raise productivity enough to absorb part of next year's increase in basic costs.

Cost Features

Wage Inflation Built In 74-75
Long-term contracts perpetuate the wage spiral, help keep the construction worker's earnings ahead of the rest of industry.

Construction Wage Roundup 76-77
August 1 wage rates in 45 cities, including fringe benefits and deferred increases for 1960.

Wages, Earnings and Hours 78-79
BLS regional base wage averages in 51 cities, hourly earnings, indexes of base wages and hours worked by major construction trades.

Compensation Insurance Rates 80

Costs Push Prices to Record 84-85
But productivity gains absorb part of the rise.

Bargain Prices for Schools 86
New York State school contract prices are down despite a rise in costs.

Heavy Construction Bids Down 91
Highway and heavy construction bids drop; rebound in irrigation and hydro costs halts.

Outlook for Basic Cost Factors 92
Materials: Steady, with steel up, lumber down.
Machinery: Look for increases soon.
Money: Climbing again.

Material Prices Report 94

Costs 'Round the World 96-100
ENR's annual roundup of materials prices, wage rates and construction costs in overseas markets shows how the inflation problem is fought overseas.

Where the Building Dollar Goes 104

Unit Prices 107-130

Construction Scoreboard 301

Until 1960, Then Move Up Again

The speedup in the cost rise is shown in the chart at right. In the upper panel, the blocks showing momentum of the Construction Cost Index movement broke away in the second quarter from the 1958 trend line. And the blocks expanded in the second and third quarters of this year. The new trend line, drawn tangent to these blocks, bends up more sharply than any time since 1950.

Similarly, the Building Cost Index gained momentum in its upward rise this year. In fact, its rate of increase quickened sooner than the Construction Cost Index. The first quarter '59 block pulled up and away from the '58 trend line. And the expanding blocks established a new, steeper trend line for '59.

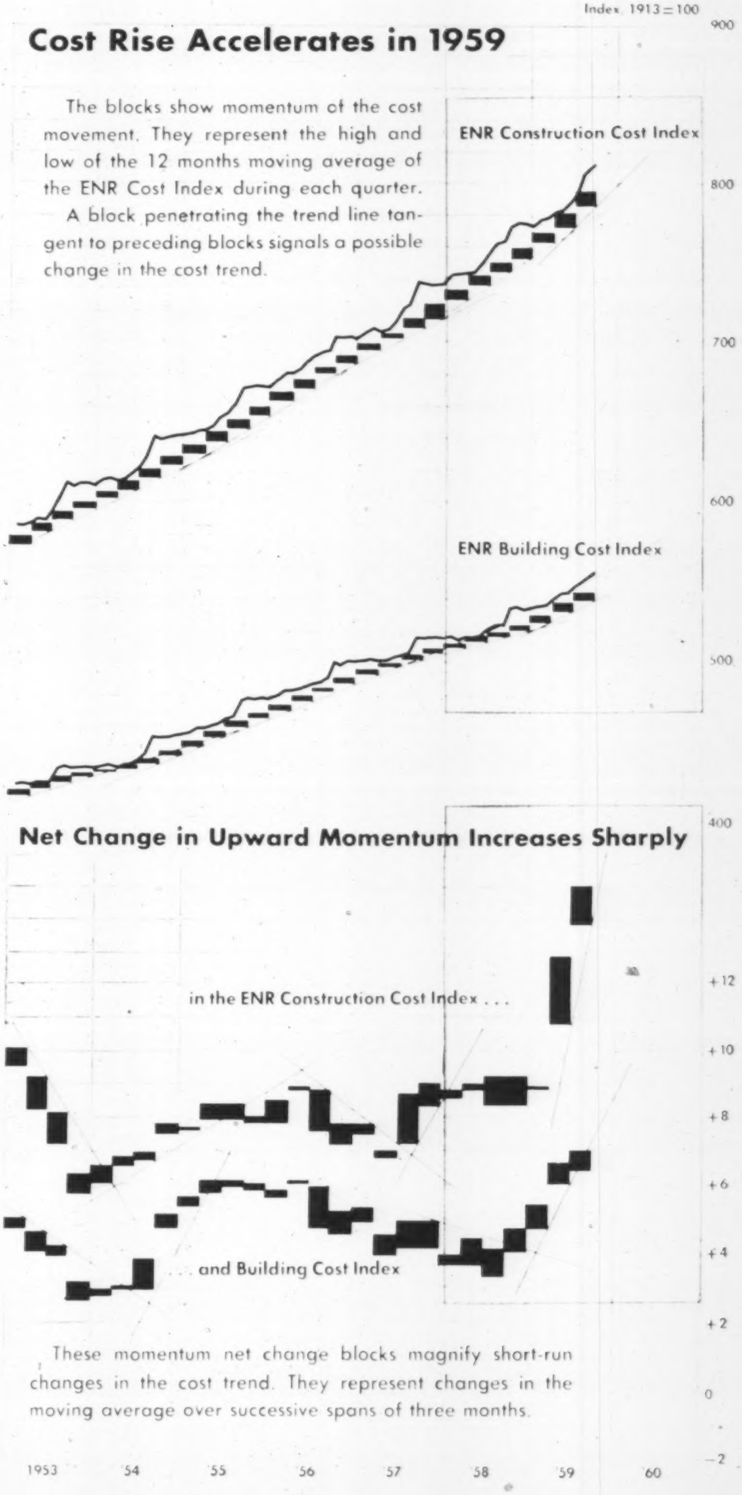
A magnified picture of how the cost rise broke into a run this year is in the lower panel. The blocks in this panel represent the smallest and largest changes each quarter in the 12-months moving average of the ENR Cost Indexes, measured by the difference between the moving average as of the current month and the average as of three months earlier.

The "momentum net change" blocks for the Construction Cost Index broke sharply upward in the second quarter and again in the third quarter. This chart also tells something about the future because historically these blocks and trend lines signal in advance changes in movement of the index.

The shrinkage in the third quarter momentum net change block points to a likely shrinkage in the near future in the blocks shown in the upper panel. Should this happen, and the block in the upper panel penetrate the established trend line, it would mean the rate of increase in the Construction Cost Index is slowing down. (And if the momentum net change blocks were to drop down close to or below the "0" line, it would be the tipoff to a decline in the Construction Cost Index.)

The third quarter momentum net change block for the Building Cost Index tells us to look for a slowdown in the annual rate of increase. That's because the latest block has penetrated the trend line. Moreover, a look at the upper panel shows that the third quarter block narrowed slightly. So it looks like a slowdown is coming in the Building Cost uptrend.

(This method of charting momentum of cost movements and spotting trends in advance was developed by Mr. George H. Petit, Hartford, Conn.)



Cost Rise Accelerates in 1959

The blocks show momentum of the cost movement. They represent the high and low of the 12 months moving average of the ENR Cost Index during each quarter.

A block penetrating the trend line tangent to preceding blocks signals a possible change in the cost trend.

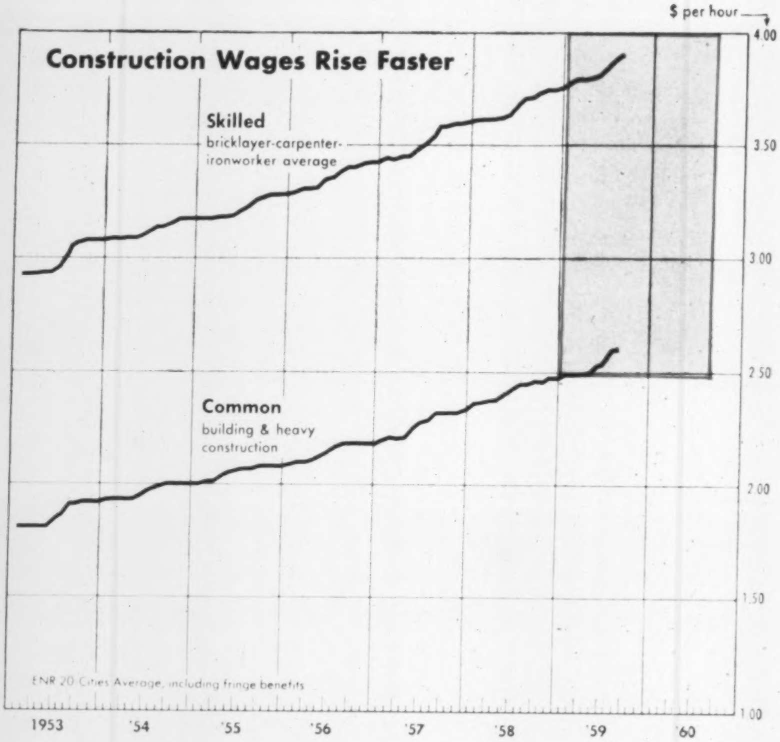
Net Change in Upward Momentum Increases Sharply

These momentum net change blocks magnify short-run changes in the cost trend. They represent changes in the moving average over successive spans of three months.

Index, 1913 = 100
900
ENR Construction Cost Index
800
700
600
ENR Building Cost Index
500
400
in the ENR Construction Cost Index . . .
+12
+10
+8
+6
+4
. . . and Building Cost Index
+2
0
−2
1953
54
55
56
57
58
59
60

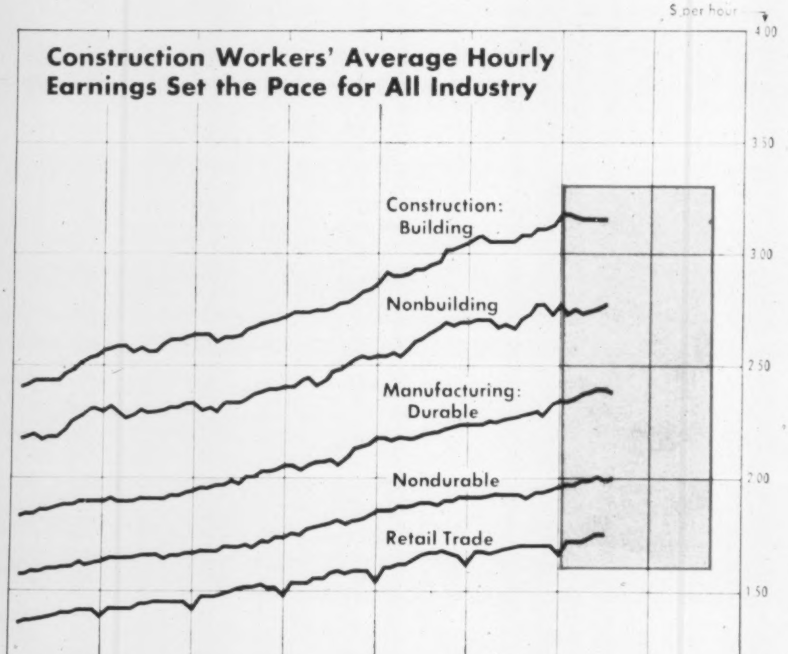
Wage Outlook

Wage Inflation



Construction Wages Rise Faster

ENR 20 Cities Average, including fringe benefits



Construction Workers' Average Hourly Earnings Set the Pace for All Industry

US Bu of Labor Statistics data

The outlook for construction wages in 1960 has long been established. Past performance of the construction industry over more than two decades has set a hard and fast rule that wages go up every year. The only question: How much?

In 1960, this will depend largely on how successful contractors' representatives will be in "holding the line" at the bargaining table.

But the 1960 wage pattern also depends greatly on what is already history—labor contracts signed in 1959, 1958, 1957 and some contracts signed even earlier. For to "stabilize" the industry's cost structure and cost estimating, contractor associations and building trades employers associations have agreed in increasing numbers to long-term labor contracts.

These agreements, running for two, three and even five years' duration, call for specified "deferred" wage increases at set future dates during the contract life. Thus, construction wages are escalated years ahead. Moreover, the deferred increases for one union tend to set a floor under what other unions will accept when they negotiate a new contract. The pattern of annual wage increases averaging between 13 cents and 18 cents appears to be firmly cast for the next two or three years.

It may be more than coincidence that annual wage increases have become larger in key cities since the long-term contract has come into fashion, with its provisions for usually substantial deferred increases. During the past four years, when use of long-term contracts has been spreading in construction, annual wage hikes have increased by 50% to 75%.

Over the past 12 months the ENR 20-Cities average of skilled labor rates rose 17.8 cents per hour, including fringe benefits. This is 2 cents more than the preceding 12 months and the biggest 12-month increase in seven years for this average of bricklayers, carpenters and structural ironworkers. In fact, the '59 increase is exceeded only by the record raise of 27 cents in 1920 and increases of 21 cents to 25.5 cents in 1947, 1948 and 1952.

Common labor rates jumped an average of 15.2 cents per hour in the past 12 months, up 1.4 cents over the increase in the previous 12-month period. This also is the greatest increase in seven years. Moreover, the latest 12-month increase is not much less than the record 16.6 cents in 1952. And the only other years that top the '59

Is Built-In for the Future

hike in common labor rates are 1946, 1947 and 1948.

Nearly all of the deferred wage increases for 1959 have already become effective in the ENR 20 Cities. But still to come are these for key trades, which included in the ENR Cost Indexes: 20 cents per hour for Baltimore carpenters, October 1; 10 cents for Los Angeles bricklayers, October 1; New Orleans common laborers get 5 cents, bricklayers, carpenters and structural ironworkers 10 cents, November 1.

Among the top 1960 deferred increases scheduled for key trades in the 20 Cities are 22½ cents for Los Angeles carpenters; 20 cents for Birmingham structural ironworkers (in two installments); 18 cents for common labor in San Francisco and 17½ cents for common labor in Atlanta.

ENR's annual roundup of wage rates, covering 28 trades in 45 cities, shows for the first time the deferred wage increases scheduled for 1960. These are listed in footnotes to the table on p. 77.

• Recession insulation—The recessions in U. S. business activity in 1948-49, 1953-54 and 1957-58 slowed, but didn't stop, the steady spiral in construction wages, which have increased every year since 1934.

However, the most recent recession had nowhere near the impact on wage increases that recessions had in 1948-49 and 1953-54. This is probably because so many labor contracts in the ENR 20 Cities are for long terms.

The deferred increases go into effect recession or no recession. In the few cases where unions did forego deferred increases early in 1958, it was only for a month or so. Unions sitting down at the bargaining table early in 1958 used the substantial deferred increases of other unions as a wedge in obtaining comparable wage hikes. (Their bargaining hands were strengthened by the sharp recovery in construction contracts.)

Thus, wage rates in the 20 Cities increased only a little less in 1958 than 1957. In September '58, the skilled wage average was 15.8 cents higher than a year earlier, an increase only about 1 cent less than during the preceding 12-month period. Common labor rates increased an average of 13.8 cents per hour during the 12 months ending September '58, only a shade less than 14.2 cents rise in the preceding 12-month period.

By contrast, skilled wage increases in the two earlier postwar recessions dropped from 16.4 cents in 1953 to 9.6 cents in 1954, and from 21.7 cents in 1948 to 13.6 cents in 1954.

Similarly, common labor rates increased only 7.7 cents per hour in 1949, or less than one-half the 16.4 cents gain in 1948. And in 1954 they rose an average of 8.8 cents per hour, against 11.9 cents in 1953.

It appears that only a serious threat of unemployment in construction, due to declining construction and general business reversals, would make a significant dent in the size of future construction wage increases.

Such developments would be no solution to the problem of cutting costs to preserve the health of the construction industry and expand its market.

What is needed to halt labor cost inflation is much more progress in eliminating wasteful labor practices. Contractors must succeed in this to protect the purchasing power of the dollars they pay for construction labor. This, plus more innovations in construction methods can save the dollar from an erosion of 3% to 5% per year.

• Construction wages lead—Construction workers' average hourly earnings are out in front of other American workers in manufacturing, retail trade—in all industries except soft coal mining.

Earnings of workers on building construction averaged $3.17 per hour in June, according to the latest U.S. Bureau of Labor Statistics figures (see table p. 78). This and the $2.78 per hour average earnings in nonbuilding construction were well above the $2.40 hourly earnings average in durable goods manufacturing. The margin was greater between construction workers' earnings and the $2.00 per hour in nondurable manufacturing, or the $1.76 per hour in retail trade. However, soft coal miners are still ahead of construction with average earnings of $3.27 in June, according to BLS.

The 11 cents per hour gain in average hourly earnings for building construction workers between June '58 and June '59 is less than the 13 cents gain in durable manufacturing. That is largely because of an increase in average hours worked and more overtime in manufacturing plants. By contrast, hours worked in construction increased only slightly.

Since June '57 with both construction and durable goods manufacturing expanding, building workers' earnings have increased more than in durable manufacturing—23 cents vs. 21 cents.

Workers in nonbuilding construction have enjoyed a smaller rise in hourly earnings—9 cents in the year and a total of 14 cents in the last two years ending June '59.

Construction Wages in ENR's 20 US Cities . . .

SKILLED LABOR, dollars per hour

Bricklayer, carpenter, ironworker average)

	1932	1939	1946	1949	1950	1955	1956	1957	1958	1959
J	1.15	1.43	1.70	2.35	2.46	3.19	3.30	3.46	3.63	3.78
F	1.11	1.43	1.73	2.35	2.47	3.19	3.31	3.46	3.62	3.79
M	1.11	1.44	1.74	2.38	2.47	3.19	3.31	3.46	3.63	3.80
A	.95	1.44	1.76	2.38	2.48	3.19	3.32	3.47	3.64	3.80
M	.96	1.44	1.77	2.38	2.49	3.21	3.34	3.49	3.65	3.82
J	.99	1.44	1.80	2.39	2.52	3.23	3.37	3.51	3.68	3.85
J	1.00	1.44	1.82	2.41	2.52	3.25	3.39	3.54	3.72	3.89
A	.98	1.44	1.83	2.44	2.54	3.26	3.41	3.58	3.73	3.90
S	.99	1.44	1.85	2.45	2.55	3.27	3.42	3.59	3.74	3.92
O	.98	1.44	1.85	2.46	2.57	3.29	3.42	3.60	3.75	....
N	.97	1.46	1.86	2.46	2.57	3.29	3.43	3.61	3.76	....
D	.98	1.46	1.87	2.46	2.58	3.29	3.43	3.61	3.76	....
Av	**1.02**	**1.44**	**1.80**	**2.41**	**2.52**	**3.24**	**3.37**	**3.53**	**3.69**	....

COMMON LABOR, dollars per hour

(Building and heavy construction average)

	1932	1939	1946	1949	1950	1955	1956	1957	1958	1959
J	.45	.68	.95	1.42	1.49	2.02	2.11	2.21	2.37	2.50
F	.45	.68	.97	1.42	1.49	2.02	2.12	2.22	2.38	2.50
M	.44	.68	.99	1.42	1.49	2.02	2.12	2.22	2.38	2.50
A	.41	.68	1.00	1.43	1.49	2.03	2.12	2.23	2.39	2.51
M	.41	.68	1.02	1.43	1.51	2.05	2.15	2.26	2.41	2.54
J	.41	.68	1.03	1.44	1.53	2.06	2.17	2.29	2.44	2.55
J	.41	.68	1.06	1.47	1.54	2.07	2.19	2.30	2.46	2.60
A	.42	.69	1.07	1.47	1.56	2.09	2.19	2.33	2.47	2.62
S	.43	.69	1.07	1.48	1.56	2.09	2.19	2.33	2.47	2.62
O	.43	.69	1.07	1.48	1.57	2.09	2.19	2.33	2.48	....
N	.43	.69	1.08	1.48	1.58	2.09	2.19	2.34	2.48	....
D	.43	.69	1.09	1.48	1.58	2.10	2.19	2.34	2.48	....
Av	**.43**	**.68**	**1.03**	**1.45**	**1.53**	**2.06**	**2.16**	**2.28**	**2.44**	....

Averages include fringe benefits—see wage table by trades for each of 20 cities on page 42 for nature and extent of these—welfare fund, pension fund and others.

. . . and in New York City

Year	Carpenters 10-hr day	Bricklayers 8-hr day	Bricklayers' Helpers 8-hr day	Common Laborers 10-hr day	Structura Ironwkrs 8-hr day
1874...	$0.23	$0.43	$0.18	$0.14	....
	8-hr day			9-hr day	
1890...	0.43	0.47	0.28	0.14	....
				8-hr day	
1907...	0.63	0.70	0.38	0.22	$0.60
1913...	0.63	0.70	0.38	0.23	0.63
1930...	1.65	1.93	1.24	1.03	1.93
1932...	1.33	1.47	1.00	0.65	1.68
	7-hr day	7-hr day	7-hr day		
1939...	1.75	1.89	1.14	0.91	1.93
1949...	2.75	3.20	1.95	1.70	3.00
1958...	4.374*b*	4.741*d*	3.564*e*	3.186*b*	4.658*c*
1959...	4.644*b*	5.127*d*	3.834*e*	3.456*b*	4.866*f*

FRINGE BENEFITS: *a* Rates from 1950 include fringe benefits such as welfare, pension, vacation and general benefit fund. *b* 4% WF-4% PF. *c* 3% WF-3% PF. *d* 4% WF-20¢ PF; base rate incl. 10¢ VF. *e* 5% WF-3% PF. *f* 3% WF-3% PF-3% BF.

CONTRACT STATUS: Bricklayers' contract expires May 31 1960; all other contracts expire June 30, 1960.

Building Trades Wage Rates—August 1, 1959

Quoted in $/hr., 8-hr. day; time and one-half for overtime after 40 hr. except as noted. Fringe benefits are shown under base rates. Footnotes to base rates indicate deferred increases.

	Carpenter	Bricklayer	Ironworker		Labor		Stone Mason	Mason's Helper	Plasterer	Mosaic & Terr	Tile Layer	Cement Finisher	Lather	Electrn Inside
			Struc	Reinf	Bldg	Heavy								
NEW ENGLAND														
Mass, Boston	3.45* .10[1]	3.80* .30	4.02* .20[25]	4.02* .20[25]	2.65 .10[1]	2.55 .10[1]	3.80* .30	2.60* .07[1]	3.65* .43	3.85*	3.85*	3.95* .10[1]	3.65* .15	3.70 .25
MIDDLE ATLANTIC														
Md, Baltimore	3.30* .075[1]	4.10* .10[1]	3.90* .075[1]	3.90* .075[1]	2.20 .075[1]	2.20 .075[1]	4.10* .075[1]	2.30 .075[1]	3.80* .105[68]	3.49* .075[1]	3.49* .075[1]	3.40* .075[1]	3.80* .105[68]	3.75* .075[1]
N J, Trenton	3.90* .10[1]	4.10* .12½[1]	4.55*[130] .23[133]	4.55*[130] .23[133]	2.75* .10[1]	3.00[134] .30[135]	4.10* .12½[1]	....	4.10* .12½[1]	4.10* .12½[1]	4.10* .12½[1]	4.10* .12½[1]	3.50*	4.35* .25[136]
N Y, New York	4.40*† .352[106]	4.80*† .44[107]	4.60* .606[108]	4.60* .606[108]	3.30† .264[106]	3.30† .264[106]	4.80*† .432[1]	3.65 .292[109]	4.50* .62[110]	4.40*†[133] .352[111]	4.05* .365[112]	4.50*† .36[106]	4.50*† .36[106]	3.90 1.272[113]
Pa, Harrisburg	3.18*[60] .035[1]	3.75*[59]	4.35* .24[60]	4.25* .24[60]	2.175[58] .035[1]	2.175[58] .035[1]	3.75*[59]	2.30*[58]	3.425*[61] .035[1]	3.50[62]	3.50[62]	3.275*[63] .035[1]	3.50*[64] .035[1]	3.50 .035[1]
Pa, Phila	3.79*	4.10* .17[1]	4.30* .23[72]	4.30* .23[72]	2.50	2.40[72] .10[1]	4.10*[73]	2.50[74]	4.15* .15[1]	3.905*	3.70* .15[1]	3.775*	4.025* .125[1]	4.375* .163[73]
SOUTH														
Ala, Birmgham	2.95	3.85*	3.45*[48] .10[49]	3.45*[48] .10[49]	1.75	1.85	3.85	1.80	3.17	3.35*	3.35*	3.03	2.95*	3.65
Fla, Jacksnvlle	3.15*	3.60*	3.475*	3.325*	1.30* .075[1]	1.30* .075[1]	3.60*	1.40*	3.35*	3.30	3.30	2.80*	3.50*	3.65* .04[20]
Ga, Atlanta	3.20[43]	3.85[43]	3.30 .07½[1]	3.15 .07½[1]	1.825[43]	1.825[43]	3.85*[43]	1.825*[43]	3.315*[43]	3.85*[43]	3.85*[43]	3.15[43]	3.35*[43]	3.50 .10
Ky, Frankfort	3.00	3.60	3.60	2.71	2.25	2.25	3.50	2.40	3.25	3.50	3.60	3.02	3.25	3.65
Ky, Louisville	3.50	3.875[82] .075[1]	3.70 .075[1]	3.70	2.45[83]	2.45[83]	3.875 .075[1]	2.70[82]	3.50 .05[1]	3.50	3.50	3.50	3.50	3.65[84] .075[1]
La, N Orleans	3.10*	3.57½* .07½[1]	3.40* .07½[1]	3.40*	1.80	1.80		1.80	3.12* .05[1]	3.20*	3.20*	3.05*	3.12½* .05[1]	3.47½* .07½[1]
Miss, Jackson	2.95	3.50*	3.25*	3.00*	1.45	1.45	3.50*	1.55*	3.00	3.00	3.00	2.85	3.00*	3.30
N C, Raleigh	3.05*	3.75*	3.40*	3.30*	1.65[77]	1.65[77]			3.25	3.40	3.50		3.30	3.325 .075[1]
Tenn, Nashville	3.05	3.75	3.40	3.30	1.65	1.65			3.25	3.40	3.40		3.30	3.37½
W Va, Chrlstn	3.575[1,3]	4.00	3.65 .10[1]	3.65 .10[1]	2.425[1,2] .075[1]	2.425[1,2] .075[1]	4.00	2.575[1,2] .075[1]	3.50	3.50	3.50	3.50[1]	3.525[1,4]	3.575 .07[1]
MIDDLE WEST														
Ill, Chicago	3.75* .20[25]	4.07* .07½[1]	4.15* .16	4.03* .19½	3.02 .07½[1]	3.02 .07½[1]	4.07½* .07½[1]	3.02½ .07½[1]	3.95* .23[1]	3.92*	3.90* .10½[1]	3.75 .20[25]	3.75½* .30[1]	4.10
Mich, Detroit	3.55* .42[28]	3.90* .30	3.90* .225	3.67* .10[30]	2.80 .42[28]	2.80 .42[28]	3.15*	2.80*	3.66* .34[31]	3.83* .10[30]	3.83* .10[30]	3.34* .36[32]	3.55 .43[33]	3.90* .44[34]
Ohio,Cincinnati	3.575[1]	3.88 .10[1]	3.80 .10[1]	3.50 .10[1]	2.75	2.65	3.90 .10[1]	3.575	3.725 .04[1]	3.65	3.65	3.575	3.675[22] .06[1]	3.92 .392
Ohio, Cleveland	3.99*[39]	3.965*[39] .10[1]	3.89*[39] .10[1]	3.89*[39] .10[1]	3.25[39]	3.165[39]	3.965*[39]	3.25*[39]	3.99*[39]	3.755*[39] .10[1]	3.815*[39]	3.99*[39]	3.99*[39]	4.05*[40]
Ohio, Columbus	3.48*[19] .01[18]	3.95*[18] .01[18]	3.10*[20] .11[17]	3.10*[20] .11[17]	2.56[17]	2.56[17]	3.95*[21]	2.16[22]	3.57½[23] .04[18]	3.38½[24]	3.38½[24]	3.33[25]	3.57½*[26] .04	3.70* .055[15]
Ohio, Toledo	3.82* .10[1]	3.93* .10[1]	3.82* .10[1]	3.79* .10[1]	2.94 .10[1]	2.94 .10[1]	3.93* .10[1]	3.07* .10[1]	3.82* .10[1]	3.75* .10[1]	3.75* .10[1]	3.82* .10[1]	3.82* .10[1]	3.90* .10[1]
Wis, Milwkee	3.47 .24[6]	3.72 .24[6]	3.54 .17[7]	3.54 .17[7]	2.69 .24[6]	2.69 .24[6]	3.72 .24[6]	2.80 .24[6]	3.48 .31[8]	3.45 .24[6]	3.45 .258[9]	3.27 .17[7]	3.58 .14[10]	3.57 .27[11]
WEST OF MISSISSIPPI														
Colo, Denver	3.50*[9]	3.90*[8]	3.41* .075[1]	3.41* .075[1]	2.25	2.25	3.90*[10]	2.58	3.625* .125[1]	3.65*[11]	3.17[12] .10[1]	3.44[8]	3.625* .075[1]	3.75 .14[5]
Iowa, Des Mns.	3.40	4.075	3.45 .075[1]	3.45 .075[1]	2.65	2.65	4.075	2.65	3.525	3.40	3.40	3.45	3.75	3.725 .15[2]
Minn, St. Paul	3.45	3.875	3.62	3.52	2.70	2.70	3.875	2.80	3.40 .33		3.24 .12[1]	3.55	3.35 .33[61]	3.55 .39
Minn, Minnp's.	3.45	3.875	2.62	3.52	2.70	2.70	3.875	2.80	3.40 .33	3.30	3.24 .12[1]	3.35	3.40 .33[61]	3.55 .39
Mo, Kans City	3.50*	3.95*	3.55	2.75*	2.455*	2.505	3.675*	3.675*	3.75*	3.825* .137[1]	3.725* .125[1]	3.625*	3.60*	3.60* .28

	Painter	Glazier	Plumber	Steamfitter	Roofer	Waterproofer	Sheet Metal Wkr	Welder	Truck Dr 1½T	Shovel Oper	Tractor Oper 30 hp	Hoist Engr 1-Dr	Air Comp	Air Tool
NEW ENGLAND														
Mass, Boston	3.225 .17	3.10 .06[1]	3.75* .32	3.75* .25	3.60*[55] .30	3.80* .30	3.50* .25	4.02* .20[25]	2.70[56] .08[1]	3.775 .10[1]	3.40 .10[1]	3.775 .10[1]	3.225 .10[1]	2.80[57] .10[1]
MIDDLE ATLANTIC														
Md, Baltimore	3.12½ .075[1]	3.25* .075[1]	3.75* .085[69]	3.74* .095[70]	2.80* .11[1]	3.20* .075[1]	3.75* .13[1]	‡	2.15 .075[71]	4.05* .10[1]	3.65* .10[1]	3.35* .10[1]	3.95* .10[1]	2.25 .075
N J, Trenton	3.50*	3.575*	4.25* .30[135]	4.25* .30[135]	4.05* .25[136]	4.05* .25[136]	4.25*[130] .25[136]	4.05* .30[135]	2.35*[131] .08[1]	4.60* .30[135]	3.58* .30[135]	4.30* .30[135]	4.45* .30[135]	2.75* .10[1]
N Y, New York	3.50*†[135] 3.85[114]	4.25*† .44[115]	4.45*† 1.01[116]	4.50*† .54[117]	4.05*†[136] .624[118]	4.05*† .624[118]	4.35*† .548[119]	4.60*†[136] .606[108]	2.35* .225[120]	4.90* .39[120]	4.025* .32[120]	4.65* .37[120]	4.15*† .332[120]	4.15*† .208[121]
Pa, Harrisburg	2.70[65]	2.82[66] .06[1]	3.50 .10[1]	3.50 .10[1]	2.65[62] .035[1]	2.65[62] .035[1]	3.35 .10[1]	† ‡	2.23[68] .10[1]	4.105*[69] .10[1]	3.52[70] .10[1]	3.825[70] .10[1]	3.46[71] .10[1]	2.30[58] .085[1]
Pa, Phila	3.325* .125[1]	3.50 $12 mo.[1]	4.00* .415[74]	4.10* .315[1]	3.60* .225[75]	3.60* .225[75]	4.035* .20[25]	3.545*[75] .10[1]	2.45* .155[76]	4.215*[76] .10[1]	3.52*[75] .10[1]	3.935*[69] .10[1]	3.41*[74] .10[1]	2.40[61] .10[1]
SOUTH														
Ala, Birmgham	3.15	2.95	3.47*[50] .10[51]	3.47*[50] .10[51]	2.70[51]	2.70[51]	3.375[52] .075[1]	‡	2.02	2.93	2.79	2.77	2.93	1.90
Fla, Jacksnvlle	2.80	2.80*	3.50* .10[1]	3.50* .10[1]	3.00*	3.00*	3.30*	‡	1.50	3.30	2.10	3.10	2.10	2.10
Ga, Atlanta	3.15	2.90	3.65* .20	3.65* .20	2.50	2.50	3.35	3.35*	1.825[43]	3.35[43]	2.825[43]	3.325[43]	2.775[43]	1.925[43]
Ky, Frankfort	3.25	2.75	3.60	3.65	2.80	2.80	3.625[47] .075[1]	3.25	2.71	3.375	3.375	3.375	2.875	2.525
Ky, Louisville	3.25	3.02	3.65[85] .075[1]	3.65[85] .075[1]	2.80	2.80	3.625 .075[1]	‡	3.75	2.675	2.675	3.025	.....	.....
La, N Orleans	2.75*	2.95*	3.50*[92] .07½[1]	3.50*[92] .07½[1]	3.00*[93] .07½[1]	3.57½* .07½[1]	3.21*[94] .07½[1]	3.21*[94] .07½[1]	3.22½*[89] .07½[1]	3.22½*[89] .07½[1]	3.22½*[89] .07½[1]	3.22½*[89] .07½[1]	3.22½*[89] .07½[1]	1.90[88]
Miss, Jackson	2.75		3.55*	3.55*	2.30	2.30	3.15*	3.25	....	3.10	2.75	2.75	2.75	1.55
N C, Raleigh	3.05	2.80	3.60 .10[1]	3.60 .10[1]	2.70	2.70	3.20*	‡	2.175	3.00	2.42[27]	2.55	2.42	1.80
Tenn, Nashville	3.05	2.80	3.60	3.60	2.70		3.20	‡	2.17½	3.00	2.42	2.55	2.15	1.80
W Va, Chrlstn	3.375	3.10	3.80	3.80	3.65	3.65	3.65	3.65 .10[1]	2.55[5,6]	3.50[7]	2.95[7]	3.15g	2.35g	2.575ab .075[1]
MIDDLE WEST														
Ill, Chicago	3.60 .25	3.89 .20[25]	3.95 .24[16]	3.95 .24[16]	4.02 .15	4.02 .15	3.95 .22½[18]	3.95 .24[16]	2.48[42] .16[1]	4.10* .05[1]	3.50 .05[1]	3.75* .05[1]	3.40* .05[1]	3.70* .05[1]
Mich, Detroit	3.40* .30[35]	3.245*	3.835* .19[36]	3.835* .175[37]		3.34* .36[38]	3.74* .48[39]	‡	2.95* [40]	3.55* .36[41]	3.55* .36[41]	3.55* .36[41]	3.275* .15[42]	2.93* .34[41]
Ohio,Cincinnati	3.15	3.65	3.85 .165[1]	3.95 .095[21]	3.60		3.805	‡	2.60 2.50[22]	3.475[1]	3.475[1]	3.70a .10[1]	3.70a .10[1]	3.70a .10[1]
Ohio, Cleveland	3.605*[39] .21[22]	3.74*[39] .25[23]	3.79*[39] .10[1]	3.79*[39] .20	3.99*[39]	3.99*[39]	3.99*[39]	3.99*[39]	2.82[39] .15[1]	3.99[39]	3.74*[39]	3.99*[39]	3.615*[39]	3.615*[39]
Ohio, Columbus	3.50[27]	3.02[28]	3.70* .05[1]	3.70* .05[1]	3.53½[29] .17½[19]	3.71[29] .17½[19]	3.62½[23] .10[1]	3.47½*	2.56[30]	3.70[31]	3.47½[31]	3.70[32]	3.32½[32]	3.07½[32]
Ohio, Toledo	3.51* .10[1]	3.30* .10[1]	3.85* .10[1]	3.85* .10[1]	3.66* .10[1]	3.66* .10[1]	3.66* .10[1]	‡	2.94* .10[1]	3.82*	3.54*	3.68*	3.41¼*	3.09½ .10[1]
Wis, Milwkee	3.22 .24[6]	3.20[15] .0915[12]	3.58 .24[6]	3.58 .24[6]	3.27 .25[13]	3.27 .25[13]	3.52 .24[6]	3.54 .17[7]	2.495[16] [14]	3.635 .17[7]	3.47 .17[7]	3.305 .17[7]	3.03 .17[7]	2.91 .24[6]
WEST OF MISSISSIPPI														
Colo, Denver	3.15[8]	3.02	3.80[13] .10[1]	3.80[13] .10[1]	3.30 .10[1]	3.30 .10[1]	3.75*[14]	‡	2.50	3.15	3.00	3.00	3.00	2.53
Iowa, Des Mns.	3.15	2.97	3.685 .29[3]	3.685 .29[3]	2.87	2.87	3.40 .15[2]	‡	2.62	3.525	3.525	3.30	3.30	2.75
Minn, St. Paul	3.30	3.18 .05[1]		3.62 .20	3.45	3.45	3.30 .40	‡	2.70	3.52	3.08	3.45	2.97	2.85
Minn, Minnp's.	3.24 .12	3.18 .05[1]		3.62 .20	3.45	3.45	3.425 .225	‡	2.70	3.52	3.08	3.45	2.97	2.85
Mo, Kans City	3.425	3.59*	3.80*	3.60* .095[1]	3.28	3.28	3.65*	3.25*	2.43*	3.454*	3.20*	3.445*	3.17*	2.65*

Building Trades Wage Rates—*continued*

	Car-penter	Brick-layer	Ironworker		Labor		Stone Mason	Mason's Helper	Plast-erer	Mosaic & Terr	Tile Layer	Cement Finisher	Lather	Elec-trn Inside	Painter	Glazier	Plumb-er	Steam-fitter	Roofer	Water-proofer	Sheet Metal Wkr	Welder	Truck Dr 1½T	Shovel Oper	Tractor Oper 30 hp	Hoist Engr 1-Dr	Air Comp	Air Tool
			Struc	Reinf	Bldg	Heavy																						
Mo, St. Louis*	3.725 .10[1]	4.05 .325[125]	3.75 .075[126]	3.75 .075[126]	2.775 .10[1]	2.775 .10[1]	4.05 .325[125]	3.05 .10[1]	3.90[164] .075[126]	3.94	3.725 .261[126]	3.975 .10[1]	3.80[164] .175[128]	4.11 .305[129]	3.55 .262[130]	4.05 .10[1]	3.85 .325[131]	4.075[165]	3.65 .07[1]	3.975 .10[1]	3.90 .33[131a]	3.275	2.80 .125[132]	3.825	3.825	3.275	3.275	3.275
Mont, Billings	3.00[158]	3.625*[157]	3.60*	3.60*	2.45[156]	2.42[155]	3.625*[157]	2.79[159]	3.275*	3.00	3.50*	3.02[158]	3.12½*[160]	3.37½ .03[164]	2.90	2.52[161]	3.45*[162]	3.45*[162]	2.90	2.90	3.27½[163] .10[1]	3.60*	2.48	3.075	3.075	2.85½	2.625	2.70[155]
N D, Bismarck	2.67	3.25	3.45	3.45	1.78	1.78	3.25	1.88	2.75	.....	3.00	2.40	2.75	2.80	2.30	2.30	2.90	2.90	2.40	2.40	2.50	‡	1.75	2.60	2.30	2.75	1.85	1.85
Okla, Okla City	3.12½[153]	4.00*	3.40*[154]	3.40*[154]	2.20[152]	2.20[151]	4.00*	3.50*	3.50*	3.50*	3.50*	3.25*	3.50*	3.62½	3.00	2.90	3.70*	3.75*	2.80	2.80	3.20*	3.40*[154]	3.15	3.40	3.50	3.00	3.00	2.75
Okla, Tulsa	3.30*[150]	4.00*	3.52*	3.52½*	2.30*[149]	2.25	4.00*	3.50*	3.50*	3.12½*	3.12½*	3.47*[139]	3.37½*	3.47½	3.00	3.10	3.60*	3.60*	2.80	2.80	3.47*	3.52½*	3.35	3.50	3.50	3.00	2.40	2.75
Tex, Austin	3.05[146]	3.75*	3.325*[147] .075[1]	3.075*[147] .075[1]	1.35[145]	1.35[145]	3.75*	1.45[145]	3.625	3.50*	3.25*	3.10[146]	3.625*	3.50	2.75[148]	2.75[148]	3.35[146] .01[123]	3.35*[146] .01[123]	2.05	....	3.3125	‡	1.50*	3.375*[146]	3.375*[146]	3.025*[146]	3.025*[146]	1.45*[145]
Tex, Dallas	3.35	3.95*[138]	3.425*[139] .075[1]	3.175*[139] .075[1]	1.80[137]	1.80[137]	3.95[138]	1.95[137]	3.625* .13[172]	3.25*[140]	3.25*[141]	3.25	3.625* .10[1]	3.50 .075[1]	3.00	3.00	3.575[142] .085[1]	3.575[142] .085[1]	2.70[138]	3.375	3.525[143] .10[1]	3.575[142] .085[1]	2.625	3.175*[144]	1.80/2.625	3.175*[144]	1.95[137]	1.95[137]
Tex, Ft Worth	3.25*	4.06½*	3.42½*[167] .25[1]	3.17½*[167] .25[1]	1.80[166] .25[1]	1.70[166] .12½[1]	4.06¼*	1.80[167] .12½[1]	3.75* .12½[1]	3.25	3.25	3.50*[168] .25[1]	3.75* .12½[1]	3.50 .07½[1]	3.00 .25[1]	3.00	3.55 .02[1]	3.55[169] .02[1]	2.70*[170]	2.50*[171]	3.52½*[105] .10[1]	3.42½*[172] .25[1]	2.15*	3.44*[173]	3.44*[173]	3.03	3.43*[172]	1.93*[173]
FAR WEST																												
Calif, L Angeles	3.60*[99] .20[1]	4.00*[98] .15[63]	3.85* .20[64]	3.60* .20[64]	2.88 .10[1]	2.88 .10[1]	4.00*[98] .15[63]	3.13 .10[1]	4.125* .425[65]	3.78[100]	3.90 .17[67]	3.625[101] .10[1]	4.125 .425[65]	4.40*[102] .044[20]	3.56*[103] .095[1]	3.515[104] .145[77]	4.10*[104] .52[78]	4.10 .52[78]	3.15 .20[79]	3.75 .10[79]	3.85 .364[115]	‡	3.155[106] .10[1]	4.01[107] .15[1]	3.91[107] .15[1]	3.61[107] .15[1]	3.13[107] .15[1]	3.09 .10[1]
Calif, SanDiego	3.60*[109] .20[88]	4.20* .175[80]	3.85* .20[81]	3.60* .20[81]	2.88[108] .075[1]	2.88[108] .075[1]	4.20* .175[82]	3.18 .075[1]	4.025* .13[83]	3.79 .03[84]	3.705[85] .03[84]	4.025 .10[1]	4.10 .13[83]	3.49*[109] .141[55]	3.515*[110] .10[1]	4.10 .14[86]	4.10* .52[78]	4.10* .52[78]	3.45[111] .10[1]	3.45[111] .10[1]	3.80[112] .322[87]	‡	3.15[113] .10[1]	4.01[107] .15[1]	3.91[107] .15[1]	3.61[107] .15[1]	3.13[107] .15[1]	3.09[113] .075[1]
Calif, San Fran	3.55* .30[89]	4.25*[115] .425[90]	3.85* .20[64]	3.60* .20[64]	2.865[116] .10[1]	2.865[116] .10[1]	4.25* .425[90]	4.25* .425[90]	3.79* .63[91]	4.25* .425[90]	3.75* .36[92]	3.12* .075[1]	3.79* .60[93]	4.22* .29[94]	3.50* .215[95]	3.48*[114] .16[96]	4.14* .54[97]	4.14* .54[97]	3.65 .40[98]	3.65 .40[98]	3.85* .35[99]	3.60* .20[64]	2.81 .20[64]	3.85[107] .20[64]	3.70[107] .20[64]	3.405 .10[1]	3.10 .10[1]	2.955 .20[64]
Idaho, Boise	3.10[118] .075[1]	3.75[117]	3.425* .075[1]	3.425* .075[1]	2.43 .075[1]	2.43 .075[1]	3.75	2.88 .075[1]	3.15	...	...	3.20	3.00	3.60	3.00	2.995	3.50* .10[1]	3.50 .10[1]	2.85	2.85	3.25	3.10 .075[1]	2.70[119] .075[1]	3.45	3.10	2.80	2.80	2.53 .075[1]
Ore, Portland	3.28*[176] .10[1]	3.97* .13[1]	3.59*[177] .10[1]	3.39*[177] .10[1]	2.67*[175] .15[133]	2.65[174] .15[133]	3.97* .13[1]	3.10*[178] .15[133]	3.65* .10[1]	3.57[179] .13[1]	3.575 .13[1]	3.30*[180] .10[1]	3.57*[181] .10[1]	3.70	3.23[182] .10[1]	3.435[183] .10[1]	3.78[184]	.....	3.40 .075[1]	3.40 .075[1]	3.50*[185] .24[134]	3.19[186] .10[1]	3.10[186] .075[1]	3.78[186] .10[1]	3.46[186] .10[1]	3.36[186] .10[1]	3.24[186] .10[1]	2.87*[187] .15[133]
Utah, Ogden	3.15	3.82	3.425	3.425	2.275	2.275	3.82	2.80	3.625	3.25	3.25	3.10	3.625 .10[1]	3.50 .09[1]	2.44	2.92	3.55[120] .10½[1]		3.00	3.00	3.20[121]	3.10	2.55	3.25	3.00		2.70	.....
Utah, Salt Lake	3.15	3.82	3.45 .075[1]	3.45 .075[1]	2.275	2.275	3.82	2.80	3.625	.....	3.25	3.10	3.625 .10[1]	3.50 .10[1]	2.94 .09[1]	2.92	3.55[120] .10½[1]		3.00 .075[1]	3.00 .075[1]	3.30 .10[1]	3.00	2.70 .075[1]	3.15 .10[1]	3.00 .10[1]	2.825 .10[1]	2.70 .10[1]	.....
Wash, Seattle	3.32* .10[1]	4.15* .10[1]	3.59*[123] .10[1]	3.39*[129] .10[1]	2.85*[122] .10[1]	2.85*[122] .10[1]	4.15*[129] .10[1]	3.15* .10[1]	3.57*[130] .30[101]	3.65* .10[1]	3.65*	3.42* .29[102]	3.40*[130] .26[103]	3.80* .11[1]	3.315*[131] .284[104]	3.32*[151] .24[105]	3.81* .24[105]	3.81* .24[105]	3.45	3.70	3.875*[132] .10[1]	3.90* .075[1]	3.15*[133] .20[64]	3.93*[133] .20[64]	3.56*[133] .20[64]	3.59*[133] .20[64]	3.29*[133] .20[64]	3.05*[128] .10[1]
Wash, Tacoma	3.32*[123] .10[1]	4.10* .10[1]	3.59*[124] .10[1]	3.39*[121] .10[1]	2.85*[122] .10[1]	2.85[122] .10[1]	4.10* .10[1]	3.15* .10[1]	3.60*[125] .30	3.50* .10[1]	3.50* .10[1]	3.39*[126] .10[1]	3.55* .30[100]	3.85* .15[5]	3.315*[126]		3.81*	3.81*	3.45*		3.725*	‡	3.15*[127]	3.93*[127] .20[64]		3.59*[127] .20[64]	3.29*[127] .20[64]	3.05*[128] .10[1]

•† 7 hr day •= 6 hr day •* double time for O.T. •‡ Same as craft doing work

BENEFITS hr. •[1] WF •[2] 7½¢ WF, 7½¢ VF •[3] 7½¢ PF, 1½¢ EF, 20¢ VF •[4] Industrial Promotion 5¢, WF 7½¢ •[5] VF •[6] WF 7¢, VF 7¢, PF 10¢ •[7] WF 7¢, PF 10¢ •[8] WF7¢, VF 14¢, PF 10¢ •[9] WF 9¢, VF 6.8¢, PF 10¢ •[10] WF 7¢, VF 7¢ •[11] WF 11¢, PF 16¢ •[12] WF3¢, VF 6.15¢ •[13] WF 8¢, VF 7¢, PF 10¢ •[14] WF $2.50 wk. VF 5¢, PF 10¢ •[15] 1% PF .005% AF •[16] AF •[17] 10¢ WF, 1¢ AF •[18] 1¢ AF, 3¢ IP •[19] 7½¢ PF, 10¢ WF •[20] PF •[21] EF 2¢, WF 7½¢ •[22] WF weekly •[23] WF 12¢, PF 9¢ •[24] PF12½¢, WF 12½¢ •[25] WF10¢, PF 10¢ •[26] VF 10¢, PH 5% •[27] WF 10¢, PF 3%, PH 2% •[28] WF 10¢, VF 4%, PH 2%, PF 3% •[29] WF 10¢, PF 7½¢, VF 5¢ •[30] WF 10¢ •[31] WF 10¢, PF 10¢, VF 4% •[32] WF 10¢, VF 10¢, PH 6¢, PF 3% •[33] VF&PH 23¢, WF 10¢, Reserve 10¢ •[34] VF 7%, WF 10¢, Suppl. Pension 7¢ •[35] WF 10¢, VF&PH 12½¢, PF 7½¢ •[36] WF 7½¢, PF 10¢, E&PF 1½¢, 6 PH •[37] WF 7½, PF 10¢, 6 PH •[38] WF 10¢, PH 6¢, PF 3% •[39] WF 10¢, VF 16¢, PF 3%, E&IP 3% •[40] WF $3 wk, PF $3 wk •[41] WF 10¢, PF 3%, VF 10¢, PH 5¢ •[42] VF 10¢, PH 5¢ •[43] WF 7½¢, PF 7½¢, AF 1¢ •[44] WF 10¢, PF 7½¢, AF 2¢ •[45] WF 15¢, PF 10¢ •[46] WF 9¢, PF 15¢ •[47] WF 10¢, PF 5¢ •[48] WF 7½¢, PF 15¢ •[49] WF 7½¢, PF 7½¢. EF 5¢ •[50] WF 8¢, AF 2¢ •[51] WF 7½¢, AF 2½¢ •[52] WF 20¢, PF 10¢ •[53] WF 15¢, PF 5¢, SUB 25¢ •[54] WF 12¢, PF 10¢, AF 3¢ •[55] WF 12¢, PF 5¢ •[56] WF 15¢, PF 15¢, AF 2¢ •[57] WF 10¢, PF 15¢ •[58] WF 15¢, PF 15¢ •[59] WF 20¢, PF 10¢ •[60] WF&PF •[61] WF 12¢, VF 20¢, IP 3¢ •[62] WF 10¢, VF 20¢, PF 10¢ •[63] WF 12¢, IP 3¢ •[64] WF 10¢, PF 10¢ •[65] WF 15¢, PF 10¢, VF 12½¢, IP 5¢ 10¢, •[67] WF 2½%, VF 7¢ •[68] WF 7½¢, IP 3¢ •[69] WF 7½¢, EF 1¢ •[70] WF 7½¢, EF 2¢ •[71] WF 5¢, PF 2½¢ •[72] WF 15½¢, PF 7½¢ •[73] WF 10¢ PF 4.[illegible]¢, AF 2.1¢ •[74] WF 16½¢, PF 20¢, AF 2½¢, IP 2½¢ •[75] WF 12½¢, PF 10¢ •[76] WF 7½¢, PF 8¢ •[77] WF 7½¢, VF 7¢ •[78] WF, 10¢ VF 7½%, PF 2½%, AF ½¢ •[79] WF 10¢, SP 10¢ •[80] WF 7½¢, IP 10¢ •[81] WF 10¢, PF 10¢ •[82] WF 7½¢, IP 10¢ •[83] WF 10¢, IP3¢ •[84] IP 3¢ •[85] WF 10¢, PF 1% •[86] WF 7¢, VF 7¢ •[87] WF 9¢, PF 10¢, VF 13¢ •[88] WF 10¢, PF 10¢ •[89] WF 10¢, PF 10¢, VF 10¢ •[90] WF 7½, PF 20¢, VF 10¢ •[91] WF 15¢, VF 25¢, PF 20¢, IP 3¢ •[92] WF 10¢, IP 1¢, VF 15¢, PF 10¢ •[93] WF 15¢, VF 25¢, PF 20¢ •[94] WF 10¢, IP 5¢ SUB 4½, PF 4½¢ •[95] WF 14½¢, VF 7¢ •[96] WF 7½¢, VF 7¢ •[97] WF 14¢, VF 18¢, PF 12½¢, AF 7½¢ •[98] 10¢ WF, 15¢ VF, 15¢ PF •[99] WF 10¢, PF 10¢, VF 15¢ •[100] WF 10¢, VF 20¢ •[101] WF 12¢, VF 18¢ •[102] WF 12¢, VF 17¢ •[103] VF 15¢, WF 7½¢, PF 3½¢ •[104] WF 10¢, VF 12½¢, PH 5.9¢ •[105] WF 10¢, VF 14¢ •[106] WF 4%, PF 4% •[107] WF 5%, PF 20¢ •[108] WF 5%, PF 3%, BF 3%, 10¢ hr in liew of PD. Hol. •[109] WF 5%, PF 3% [110] WF 25¢, PF 15¢, BF 20¢, IP 2¢ •[111] WF 3%, PF 5% •[112] WF 3%, PF 3%, VF 3% •[113] WF 5%, PF 5%, 6 PH, 1% Nat. Fund, $4 day ammunity, 4½% SS, 1% JIB, 4% VF •[114] FB •[115] 3% WF, 5% PF, 10¢ hr VF •[116] 14% + 10¢ an hour FB, $2 SUB •[117] 4% WF, 4% PF, 3% VF, 1% EF •[118] 5% WF, 3% BF, 10¢ hr SF, 20¢ hr BF •[119] 3% + 10 an hour WF, 3% PF, 2% + 10¢ an hour VF •[120] 4% WF, 4% PF, 6 PH •[121] 5% WF, 6 PH •[122] WF 10¢, EF 3¢ •[123] AF •[124] National Fund 1% •[125] 5% VF, 12¢ WF •[126] 7½% WF •[127] 7½¢ WF, 15% VF •[128] 7½¢ WF, 5% VF •[129] 4% VF, 10¢ WF, 1% PF •[130] 7½¢ WF, 5% VF •[131] 5¢ PF, 2½¢ EF, 5¢ IP, 10¢ WF, 10¢ VF •[132] 7½¢ WF, 7½¢ VF •[133] WF 10¢, PF 5¢ •[134] HW 10¢, VF 14¢ •[134] 15½¢ WF, 7½¢ PF •[135] WF 11¢, PF 19¢ •[136] WF 15¢, PF 10¢

DEFERRED INCREASES (Some include increase in fringe benefits): •[1] 6/1/60, 10¢ •[2] 12/1/60, 5¢ •[3] 12/1/59, 5¢ •[4] 6/1/60, 15¢ •[5] 4/1/60, 12½¢ •[6] 12/1/60, 12½¢ •[7] 9/1/59, 15¢; 4/1/60, 10¢; 9/1/60, 10¢ •[8] 4/1/60, 10¢ •[9] 7/1/60, 10¢; 1/1/61, 5¢ •[10] 4/1/60, 10¢ •[11] 9/1/59, 10¢ •[12] 7/1/60, 13¢ •[13] 4/1/60, 15¢ •[14] 7/1/60, 15¢; 7/1/61, 15¢ •[15] 10/1/59 + 20¢ base ¢ 4¢ fringe •[16] 7/1/60 WF $3.00 wk., 7/1/61 WF $4.00 wk. •[17] 11/1/59, 6¢ •[18] 11/1/59, 6¢; 5/1/60, 5¢ •[19] 11/1/59, 6¢; 5/1/60, 7¢ •[20] 11/1/59, 5¢ •[21] 11/1/59, 6¢; 5/1/60, 5¢ •[22] 11/1/59, 6¢; 6/1/60, 8¢ •[23] 1/1/60, 7½¢; 5/1/60, 5¢ •[24] 11/1/59, 6¢; 6/1/60, 6¢; 11/1/60, 6¢ •[25] 11/1/59, 5¢; 5/1/60 10¢ •[26] 1/1/60, 7½¢; 5/1/60, 5¢ •[27] 5/1/60, 10¢ •[28] 6/1/60, 5¢; 12/1/60, 5¢ •[29] 11/1/59, 4¢; 5/1/60, 6¢ •[30] 11/1/59, 6¢; 5/1/60, 8¢ •[31] 5/1/60, 10¢; 11/1/59, 10¢ WF •[32] 3/1/60, 5¢ •[33] 12/1/59, 5¢; 6/1/60, 12¢ •[34] 11/17/59, 7½¢; 5/17/60, 7½¢ •[35] 6/1/60, 12½¢ •[36] 6/1/60, 17¢ •[37] 12/1/59, 2½¢; 6/1/60, 13¢ •[38] 6/1/60, 10¢; 6/1/61, 5¢ •[39] 5/1/60, 12¢ •[40] 5/1/60, 12¢; 5/1/61, 12¢ •[41] 10/7/59, 7¢; 1/6/60, 10¢ •[42] 1/1/61, 7¢ •[43] 1/1/60, 7½¢; 7/1/60, 10¢ •[44] 1/1/60, 5¢; 7/1/60, 10¢ •[45] 9/1/59, 10¢ •[46] 7/1/60, 15¢ •[47] 8/20/60, 10¢ •[48] 1/1/60, 5¢; 7/1/60, 15¢ •[49] 1/1/60, 5¢ •[50] 9/1/59, 11¢ •[51] 6/1/60, 10¢; 12/1/60, 5¢ •[52] 12/1/59, 5¢; 6/1/60, 15¢ •[53] 7/1/60, 12½¢; 5¢ fringes •[54] 7/1/60, 2½¢ fringes •[55] 4/1/60, 10¢; 4/1/61, 10¢ •[56] 5/1/60, 15¢; 5/1/61, 15¢ •[57] 4/1/61, 10¢; 4/1/62, 10¢ •[58] 11/1/59, 5¢; 5/1/60, 12½¢; 5/1/61, 12½¢ •[59] 5/1/60, 12½¢; 5/1/61, 12½¢ •[60] 11/1/59, 5¢; 5/1/60, 12¢; 5/1/61, 13¢ •[61] 11/1/59, 5¢; 5/1/60, 10¢ •[62] 5/1/60, 17½¢ •[63] 11/1/59, 10¢; 5/1/60, 12½¢; 5/1/61, 12½¢ •[64] 5/1/60, 15¢; 5/1/61, 17½¢ •[65] 1/1/60, 5¢; 5/1/60, 15¢; 5/1/61, 15¢ •[66] 1/1/60, 6¢; 6/1/60, 6¢; 1/1/61, 6¢ •[67] 11/1/59, 5¢; 5/1/60, 12½¢ •[68] 11/1/59, 5½¢; 5/1/60, 10¢ •[69] 5/1/60, 12¢ •[70] 5/1/60 11¢ •[71] 5/1/60, 10¢ •[72] 5/1/60, 15¢ •[73] 5/1/60, 15¢; 5/1/61, 15¢ •[74] 5/1/60, 10¢ fringes •[75] 5/1/60, 11¢ •[76] 5/1/60, 13¢ •[77] 1/1/60, 10¢ •[78] 2/1/60, 15¢; 9/1/60, 15¢ •[79] 7/1/60, 10¢; 1/1/61, 10¢ •[80] 12/28/59, 5¢; 2/28/60, 10¢ •[81] 10/1/59, 20¢ •[82] 5/1/60, 10¢ •[83] 5/1/60, 12¢ •[84] 7/1/60, 10¢ •[85] 1/1/60, 5¢ •[86] 9/1/60, 10¢ •[87] 12/1/59, 10¢ •[88] 11/1/59, 5¢ •[89] 11/1/59, 10¢ •[90] 11/1/59, 7½¢; 5/1/60, 7½¢ •[91] 11/1/59, 7½¢; 5/1/60, 7½¢; 11/1/60, 9½¢ •[92] 11/1/59, 10¢; 5/1/60, 10¢; 11/1/60, 10¢ •[93] 12/1/59, 5¢; 5/1/60, 15¢; 5/1/61, 15¢ •[94] 5/1/60, 15¢; 5/1/61, 15¢ •[95] 8/1/60, 25¢ •[96] 7/1/60, 25¢ •[97] 11/1/59, 7¢; 5/1/60, 10¢; 11/1/60, 5¢ •[98] 10/1/59, 7¢ HW, 3¢ TP •[99] 5/1/60, 22½¢ •[100] 1/1/60, 15¢; 7/1/61, 17¢ •[101] 5/1/60, 22½¢; 5/1/61, 19¢ •[102] 7/1/60, 25¢ •[103] 1/1/60, 10¢ •[104] 1/1/60, 8¢ •[105] 7/1/60, 20¢ •[106] 5/1/60, 21¢; 5/1/61, 21¢ •[107] 6/15/60, 20¢, 5¢ PF; 6/15/61, 20¢, 5¢ PF •[108] 5/1/60, 20¢; 5/1/61, 20¢ •[109] 5/1/60, 22½¢; 5/1/61, 22½¢ •[109] 1/1/60, 5¢ •[110] 1/1/60, 8¢ •[111] 11/15/59, 15¢ •[112] 7/1/60, 30¢; 7/1/61, 10¢ •[113] 5/1/60, 21¢; 5/1/61, 21¢ •[114] 1/1/60, 8¢ •[115] 8/1/60, 15¢ •[116] 5/1/60, 18¢; 5/1/61, 18¢ •[117] 1/1/60, 10¢; 1/1/61, 15¢ •[118] 6/1/60, 15¢; 6/1/61, 15¢ •[119] 10/1/59, 5¢ •[120] 10/1/59, 12¢; 4/1/60, 13¢ •[121] 11/1/59, 10¢ •[122] 1/1/60, 15¢; 1/1/61, 15¢ •[123] 1/1/60, 16¢; 1/1/61, 15¢ •[124] 4/20/60, 17¢; 4/20/61, 16¢ •[125] 1/1/60, 12¢ •[126] 4/1/60, 16¢; 4/1/61, 15¢ •[127] 6/1/60, 25¢ •[128] 1/1/60, 15¢; 1/1/61, 15¢ •[129] 4/1/60, 17¢; 4/1/61, 16¢ •[130] 1/1/60, 15¢ •[131] 4/1/60, 15¢; 4/1/61, 15¢ •[131a] 1/1/60, 10¢; 7/1/60, 9¢; 1/1/61, 8¢ •[132] 4/1/60, 15¢; 8/1/60, 5¢ •[133] 6/1/60, 25¢ •[134] 1/1/60, 10¢; 7/1/60, 10¢ •[135] 8/1/60, 14¢, 1% FB; 8/1/61, 13¢ •[136] 1/1/60, 15¢ •[137] 7/1/60, 5¢ •[138] 1/1/60, 5¢ •[139] 4/1/60, 12½¢ •[140] 10/1/59, 12½¢ •[141] 6/15/60, 12½¢ •[142] 7/1/60, 12½¢ •[143] 7/1/60, 10¢ •[144] 2/1/60, 5¢ •[145] 1/1/60, 5¢; 7/1/60, 5¢; 1/1/61, 5¢; 7/1/61, 5¢ •[146] 1/1/60, 5¢ •[147] 11/1/59, 5¢ •[148] 12/1/59, 6¼¢ •[149] 6/1/60, 8¢; 12/1/60, 7¢ •[150] 6/1/60, 10¢; 1/1/61, 5¢ •[151] 4/15/60, 15¢ •[152] 3/14/60, 15¢ •[153] 1/1/60, 15¢; 1/1/61, 10¢ •[154] 1/1/60, 10¢ •[155] 4/1/60, 12¢; 4/1/61, 15¢ •[156] 4/1/61, 12¢ •[157] 3/15/60, 12½¢ •[158] 9/1/59, 5¢ •[159] 4/1/60, 9¢ •[160] 9/1/59, 12½¢ •[161] 7/1/60, 10¢ •[162] 11/1/59, 5¢ •[163] 7/1/60, 12½¢ •[164] 7/1/60, 10¢; 7/1/61, 10¢ •[165] 1/1/60, 22½¢; 4/1/60, 25¢ •[166] 12/5/59, 7½¢ •[167] 4/1/60, 12½¢ •[168] 2/1/60, 10¢ •[169] 1/1/60, 7½¢; 7/1/60, 5¢; 1/1/61, 7½¢ •[170] 6/1/60, 5¢ •[171] 6/1/60, 25¢ •[172] 1/1/60, 10¢ •[173] 6/1/60, 6¢ •[174] 1/1/60, 10¢, PF 5¢ •[175] 1/1/60, 12¢, 5¢ FB; 1/1/61, 16¢ •[176] 4/1/60, 18¢; 4/1/61, 17¢ •[177] 4/8/60, 17¢; 4/8/61, 16¢ •[178] 1/1/60, 10¢, 5¢ PF; 1/1/61, 10¢ •[179] 4/11/60, 17¢; 4/11/61, 17¢ •[180] 1/1/60, 18¢; 1/1/61, 16¢ •[181] 1/1/60, 17½¢; 1/1/61, 19¢ •[182] 1/1/60, 17¢; 1/1/61, 18¢ •[183] 1/1/60, 8¢ •[184] 9/1/59, 10¢; 3/1/60, 10¢; 9/1/60, 10¢ •[185] 1/1/60, 10¢, 4% VF; 7/1/60, 15¢ •[186] 3/31/60, 15¢ PF •[187] 1/1/60, 12¢, PF 5¢; 1/1/61, 16¢ •[188] 4/1/60, 15¢; 4/1/61, 15¢ •[189] 7/1/60, 12½¢ •[190] 7/1/60, 15¢; 7/1/61, 10¢ •[191] 5/1/60, 10¢; 5/1/61, 10¢

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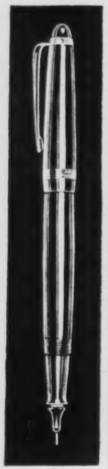

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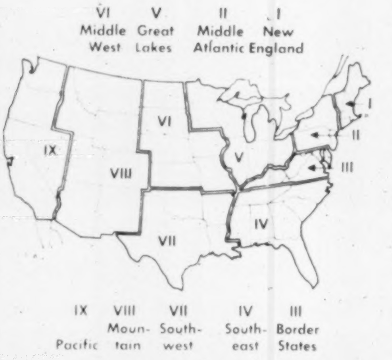
Construction Wage Gains

The Bureau of Labor Statistics historical series of construction wages differs from the ENR series in that BLS figures do not include fringe benefits. However, BLS figures do show the wage trend for trades not regularly covered by ENR, plus regional comparisons.

The BLS also reports each quarter on wage rates and certain fringe benefits for a few trades in 100 cities. Wage data for those cities not covered by ENR's Annual Wage Roundup (p. 76) are shown on the opposite page.

Hourly earnings figures reported by the BLS are helpful in comparing construction workers with other industries, for which hourly wage rates are not usually available.



COST OF LIVING is creeping upward again, as measured by the Bureau of Labor Statistics Consumer Price Index, 1947-49 = 100.

	1939	1945	1949	1955	1956	1957	1958	1959
Jan	59.6	76.1	102.7	114.3	114.6	118.2	122.3	123.8
Feb	59.4	76.0	101.6	114.3	114.6	118.7	122.5	123.7
Mar	59.3	76.0	101.9	114.3	114.7	118.9	123.3	123.7
Apr	59.2	76.1	102.1	114.2	114.9	119.3	123.5	123.9
May	59.1	76.7	101.8	114.2	115.4	119.6	123.6	124.0
Jun	59.0	77.3	102.0	114.4	116.2	120.2	123.7	124.5
Jul	59.2	77.5	101.4	114.7	117.0	120.8	123.9	124.9
Aug	59.0	77.5	101.6	114.5	116.8	121.0	123.7	
Sept	60.2	77.2	102.1	114.9	117.4	121.1	123.7	..
Oct	60.0	77.2	101.5	114.9	117.7	121.1	123.7	..
Nov	59.9	77.5	101.6	115.0	117.8	121.6	123.9	..
Dec	59.6	77.8	101.0	114.7	118.0	121.6	123.8	..

Pre-depr. high 77.0, Nov 1925 Depr. low 53.6, Apr 1933

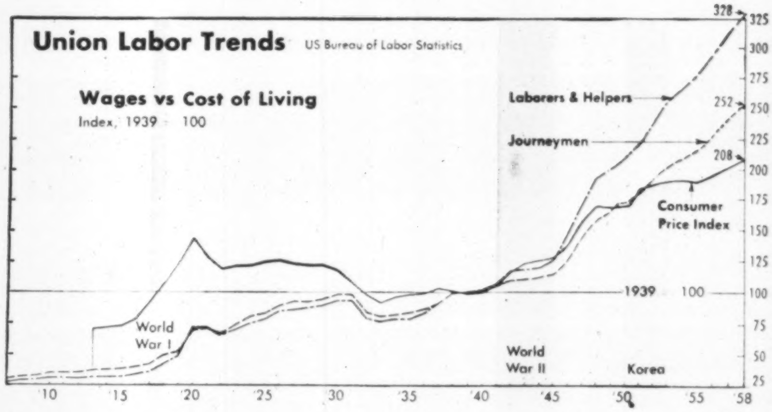
UNION WAGE RATES BY REGION show Middle Atlantic has highest.

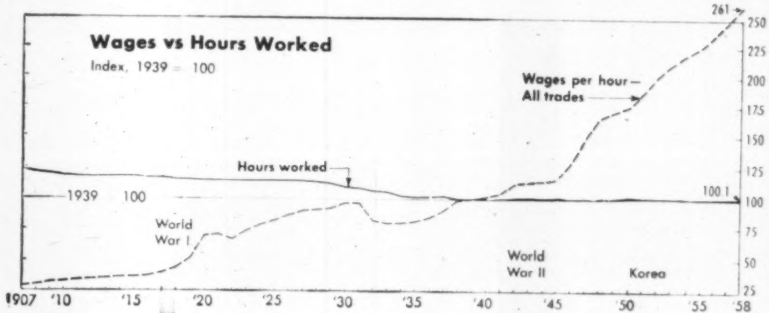
Trade	Region: US	New England I	Middle Atlantic II	Border States III	Southeast IV	Great Lakes V	Middle West VI	Southwest VII	Mountain VIII	Pacific IX
All building trades, July 1, 1958	$3 34	$3 16	$3 68	$3 13	$2 80	$3 42	$3 30	$2 85	$3 06	$3 34
Journeymen	$3 54	$3 40	$3 89	$3 42	$3 08	$3 59	$3 48	$3 19	$3 31	$3 48
Asbestos workers	3 64	3 65	3 96	3 58	3 29	3 70	3 55	3 39	3 54	3 55
Boilermakers	3 72	3 60	4 29	3 55	3 45	3 68	3 50	3 45	3 63	3 68
Bricklayers	3 87	3 65	4 18	3 73	3 58	3 80	3 87	3 68	3 76	3 86
Carpenters	3 46	3 26	3 90	3 27	2 87	3 54	3 39	3 02	3 23	3 30
Cement finishers	3 43	3 50	3 87	3 18	2 76	3 45	3 63	2 99	3 23	3 30
Electricians (inside wiremen)	3 68	3 44	3 92	3 59	3 23	3 74	3 69	3 38	3 49	3 82
Elevator constructors	3 67	3 52	4 00	3 58	3 30	3 67	3 59	3 41	3 36	3 71
Glaziers	3 22	3 05	3 58	3 13	2 53	3 40	3 36	2 83	2 70	3 16
Lathers	3 72	3 59	4 00	3 55	3 15	3 60	3 54	3 43	3 42	3 86
Machinists	3 63	3 70	3 81	3 61	3 35	3 61	3 61	3 42	3 49	3 68
Marble setters	3 62	3 62	3 79	3 71	3 46	3 66	3 51	3 26	3 21	3 56
Mosaic and terrazzo workers	3 62	3 60	3 95	3 48	3 28	3 51	3 59	3 16	3 36	3 48
Painters	3 27	3 01	3 32	3 16	2 80	3 38	3 27	2 94	3 08	3 32
Paperhangers	3 24	3 14	3 04	2 81	2 96	3 37	3 28	2 83	2 96	3 48
Pipefitters	3 71	3 44	4 04	3 46	3 32	3 69	3 69	3 43	3 50	3 77
Plasterers	3 75	3 59	4 18	3 49	3 03	3 64	3 68	3 40	3 38	3 78
Plumbers	3 70	3 30	3 98	3 50	3 36	3 66	3 66	3 36	3 48	3 77
Rodmen	3 51	3 89	3 98	3 42	3 03	3 62	3 40	3 01	3 18	3 27
Roofers, composition	3 26	3 45	3 66	2 75	2 47	3 50	3 19	2 54	3 10	3 14
Roofers, slate and tile	3 37	3 67	3 63	3 37	2 58	3 56	3 20	2 84	3 09	3 21
Sheet-metal workers	3 54	3 41	3 87	3 45	3 13	3 57	3 46	3 13	3 33	3 59
Stonemasons	3 77	3 69	3 82	3 84	3 66	3 68	3 72	3 74	3 75	3 86
Structural ironworkers	3 62	3 90	4 01	3 66	3 16	3 66	3 45	3 19	3 18	3 52
Tile layers	3 50	3 62	3 67	3 43	3 25	3 51	3 38	3 12	3 24	3 50
Helpers and laborers	2 55	2 50	2 89	2 14	1 69	2 74	2 51	1 70	2 28	2 73
Bricklayers' tenders	2 68	2 47	3 13	2 14	1 67	2 77	2 59	1 81	2 58	2 93
Building laborers	2 47	2 49	2 74	2 10	1 69	2 70	2 47	1 64	2 18	2 62
Composition roofers' helpers	2 19	2 57	2 54	2 15	1 67	2 40	2 55	1 66		2 22
Elevator constructors' helpers	2 63	2 46	2 99	2 54	2 31	2 57	2 52	2 38	2 35	2 62
Marble setters' helpers	2 78	2 73	3 08	2 63	..	2 80	2 53	1 92	2 45	2 71
Plasterers' laborers	2 85	2 63	3 03	2 33	1 72	2 92	2 77	1 86	2 59	3 58
Plumbers' laborers	2 42		2 73	2 14	1 66	2 78	2 72	1 53	2 59	2 68
Terrazzo workers' helpers	2 89	2 74	3 16	2 46		2 86	2 71	1 96	2 34	3 01
Tile layers' helpers	2 75	2 72	2 94	2 51	....	2 78	2 47	1 91	2 45	2 67

AVERAGE HOURLY EARNINGS of contract construction workers continue to rise faster than for manufacturing labor, Bureau of Labor Statistics figures show.

	Building*							Non building*							Manufacturing						
	1946	1949	1955	1956	1957	1958	1959	1946	1949	1955	1956	1957	1958	1959	1946	1949	1955	1956	1957	1958	1959
Jan.	$1.40	$1.92	$2.65	$2.74	$2.92	$3.07	$3.19	$1.30	$1.71	$2.31	$2.41	$2.55	$2.71	$2.75	$1.00	$1.41	$1.81	$1.93	$2.05	$2.10	$2.19
Feb.	1.42	1.93	2.65	2.75	2.91	3.08	3.18	1.30	1.71	2.33	2.41	2.56	2.71	2.76	1.00	1.40	1.85	1.93	2.05	2.10	2.20
Mar.	1.41	1.93	2.63	2.75	2.91	3.06	3.17	1.28	1.70	2.31	2.45	2.55	2.71	2.74	1.04	1.40	1.85	1.95	2.05	2.11	2.22
Apr.	1.42	1.93	2.63	2.75	2.92	3.06	3.17	1.31	1.71	2.34	2.42	2.58	2.68	2.75	1.06	1.40	1.86	1.96	2.05	2.11	2.23
May	1.43	1.93	2.63	2.76	2.94	3.06	3.17	1.31	1.71	2.34	2.44	2.61	2.69	2.76	1.07	1.40	1.87	1.96	2.06	2.11	2.23
June	1.44	1.92	2.64	2.78	2.94	3.06	3.17	1.31	1.70	2.34	2.48	2.62	2.67	2.78	1.08	1.41	1.87	1.97	2.07	2.12	2.24
July	1.47	1.92	2.66	2.79	2.96	3.09	...	1.36	1.71	2.36	2.49	2.65	2.71		1.09	1.41	1.89	1.96	2.07	2.13	2.23
Aug.	1.48	1.93	2.67	2.81	2.97	3.09	...	1.35	1.71	2.38	2.51	2.67	2.73		1.11	1.40	1.88	1.98	2.07	2.13	...
Sept.	1.51	1.94	2.68	2.84	3.02	3.13	...	1.37	1.73	2.39	2.53	2.70	2.78	...	1.13	1.41	1.90	2.01	2.08	2.14	...
Oct.	1.53	1.94	2.70	2.86	3.02	3.13	...	1.40	1.74	2.40	2.55	2.69	2.78	...	1.14	1.39	1.91	2.02	2.09	2.14	...
Nov.	1.55	1.95	2.71	2.87	3.03	3.14	...	1.43	1.75	2.40	2.54	2.70	2.78	...	1.15	1.39	1.93	2.03	2.11	2.17	...
Dec.	1.57	1.96	2.72	2.89	3.05	3.19	...	1.43	1.78	2.41	2.55	2.70	2.78	...	1.16	1.41	1.93	2.05	2.10	2.19	...

(Reported by BLS)





BLS Trends in Individual Trades

Wages Per Hour: Index based on 1939=100

Year	All Building Trades	Journeymen	Helpers & Laborers	Bricklayers	Carpenters	Cement Finishers	Electricians, Inside Wiring	Glaziers	Lathers	Painters	Plasterers	Plumbers	Sheet Metal Workers	Steamfitters	Stonemasons	Structural Ironworkers	Building Laborers	Bricklayers' Tenders
1907M	29.3	29.7	27.3	37.7	29.8	34.5	27.9			26.2	37.3	33.3	30.6	30.1	33.9	27.9	30.8	30.3
1913M	36.1	36.9	31.8	41.5	36.8	38.0	33.8		34.6	35.5	39.3	37.9	35.6	35.0	36.7	37.3	34.2	31.8
1926M	88.3	88.7	84.9	84.1	88.5	86.6	81.5	80.7	83.0	90.9	92.4	83.9	86.3	84.9	92.7	81.1	86.9	85.5
1930M	97.0	97.5	93.3	101.8	96.9	95.4	90.9	92.6	98.6	100.6	98.1	91.5	94.7	93.5	99.1	92.5	92.9	94.9
1932M	83.1	83.6	79.2	87.0	79.6	83.6	87.9	78.0	80.0	85.3	81.4	80.5	83.4	81.0	88.4	81.0	78.7	78.4
1938J	99.3	99.3	99.2	99.5	99.8	99.6	99.5	99.3	96.8	99.2	99.2	99.1	98.6	99.3	99.7	98.9	99.4	99.7
1942	111.9	110.9	117.5	108.3	112.1	110.8	113.5	108.8	109.1	110.5	105.0	110.5	116.0	109.3	108.0	108.7	119.6	115.7
1946	129.3	126.8	146.3	125.6	129.7	128.2	124.9	123.4	124.2	127.3	119.0	123.2	133.0	124.6	126.5	121.4	152.2	141.7
1948	163.5	159.4	192.7	165.6	164.7	161.1	154.4	155.5	157.8	154.4	148.2	158.2	164.4	154.3	166.0	151.9	200.8	185.5
1949	170.3	166.1	199.8	174.0	169.1	165.8	168.1	160.5	164.2	162.1	161.9	162.8	169.6	161.3	175.7	157.4	208.4	190.4
1950	177.8	173.2	210.8	180.4	177.4	172.7	172.3	169.4	179.6	167.7	169.3	166.7	177.9	168.3	187.1	164.8	220.0	203.4
1951	189.1	184.0	225.3	188.0	189.1	183.7	185.4	177.8	188.0	178.7	177.5	176.6	188.1	178.6	193.6	175.7	235.6	213.9
1952	200.8	195.3	240.0	203.9	200.6	192.2	196.0	186.0	194.4	190.2	187.6	187.0	202.2	189.1	207.5	184.0	251.7	228.0
1953	211.2	204.9	256.6	210.0	211.1	203.8	204.0	199.1	203.4	199.5	194.8	193.8	211.5	197.9	210.9	194.5	270.8	240.0
1954	218.9	212.2	267.7	216.8	217.9	209.7	210.0	204.9	208.7	205.7	198.4	204.5	221.5	208.5	215.7	201.3	282.6	250.4
1955	226.6	219.4	279.1	222.6	225.9	217.9	214.8	214.0	214.2	213.9	204.3	209.4	230.0	213.5	222.1	208.9	295.3	260.6
1956	237.1	229.2	295.9	232.6	235.4	228.4	226.6	225.2	223.3	222.5	212.1	218.7	240.4	223.3	232.1	217.7	312.1	281.2
1957	249.3	240.8	313.2	241.7	247.8	239.9	237.9	236.8	232.7	234.3	219.9	230.8	251.8	235.2	238.8	229.0	331.7	296.0
1958	260.7	251.6	328.4	249.8	259.4	249.9	250.5	248.4	242.6	242.7	226.9	240.5	265.9	247.3	247.7	236.7	348.1	310.5

Hours Worked Per Week: Index based on 1939=100

Year	All Building Trades	Journeymen	Helpers & Laborers	Bricklayers	Carpenters	Cement Finishers	Electricians, Inside Wiring	Glaziers	Lathers	Painters	Plasterers	Plumbers	Sheet Metal Workers	Steamfitters	Stonemasons	Structural Ironworkers	Building Laborers	Bricklayers' Tenders
1907M	124.3	123.8	126.1	122.9	121.0	122.7	124.2			133.1	125.8	120.6	117.0	120.3	118.4	121.3	121.6	118.9
1913M	118.2	118.0	118.3	114.9	115.6	119.8	120.7		121.8	125.9	124.3	119.2	114.9	118.0	115.7	114.1	118.3	116.0
1926M	114.9	115.1	113.9	113.3	113.5	113.4	115.9	117.5	118.9	120.7	118.2	116.5	111.8	114.4	114.5	112.8	112.1	113.9
1930M	109.8	110.0	109.0	107.1	109.4	108.1	109.9	112.4	110.4	115.4	113.0	109.9	106.9	108.5	107.1	108.8	110.0	106.9
1932M	106.5	106.6	105.7	103.1	105.0	105.6	106.2	107.9	109.3	114.2	110.1	108.0	103.6	105.4	104.8	104.8	104.9	104.0
1938J	100.2	100.1	100.2	99.0	100.0	100.0	100.2	100.2	100.8	110.4	100.0	99.7	100.0	99.6	100.1	100.1	100.1	100.3
1942	101.1	101.8	98.8	100.8	100.8	100.6	104.5	102.0	102.5	106.5	102.0	99.9	100.9	102.2	100.2	101.1	98.8	98.6
1946	100.2	101.1	97.5	100.3	103.3	100.4	100.4	102.0	102.2	106.1	104.1	98.3	100.8	101.3	100.0	101.1	97.2	96.9
1948	100.1	101.0	97.4	100.5	100.2	100.0	100.4	103.5	98.1	106.2	102.9	97.6	100.1	101.3	101.0	101.1	97.2	96.4
1949	100.2	101.1	97.4	100.1	100.2	100.0	102.1	103.5	98.1	106.2	103.5	97.6	99.9	101.3	100.8	101.1	97.2	96.4
1950	100.3	101.2	97.4	100.1	100.2	100.0	102.1	103.5	100.2	106.2	105.9	98.2	99.9	101.3	100.8	101.1	97.2	96.4
1951	100.2	101.1	97.3	100.2	100.2	100.0	102.1	103.5	100.2	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.0	96.2
1952	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	100.2	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.3
1953	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	100.3	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.3
1954	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	99.8	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.3
1955	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	99.8	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.2
1956	100.2	101.1	97.5	100.2	100.2	100.0	101.0	103.5	99.8	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.2
1957	100.2	101.1	97.5	100.2	100.2	100.0	101.1	103.5	99.8	104.9	105.9	98.2	99.9	101.3	100.9	101.1	97.1	96.2
1958	100.1	101.0	97.5	100.1	100.2	100.0	99.7	103.5	99.8	104.9	105.8	98.2	99.9	101.3	100.7	101.1	97.1	96.2

•M May 1. •J June 1. •All others July 1.

WAGE RATES in cities not covered by ENR: BLS rates, July 1, '59.

	Bricklayer	Carpenter	Electrician
Albuquerque, N. M.	$4.000	$3.275	$3.450+3½¢
Burlington, Vt.	3.750	2.750	3.000
Butte, Mont.	3.750	3.125	3.450+3½¢
Charlotte, N. C.	3.100	2.400	2.900+3¢
Chattanooga, Tenn.	3.875	3.200	3.450+3½¢
Cheyenne, Wyo.	3.750	3.050	3.430+3½¢
Columbia, S. C.	2.750	2.000	3.000+3¢
El Paso, Tex.	3.850	3.250	3.550+3½¢
Erie, Pa.	4.000+10¢	3.540+7½¢	3.775+4¢
Evansville, Ind.	3.725	3.250	3.400+3½¢
Fargo, N. Dak.	3.600	2.670	3.100
Grand Rapids, Mich	4.100	3.400+8¢	3.560+12¢
Hartford, Conn.	3.850+22¢	3.450+22¢	4.025+12¢
Houston, Tex.	3.875	3.440	3.650+11½¢
Knoxville, Tenn.	3.800	3.100	3.400+3½¢
Lansing, Mich.	4.000	3.430+8¢	3.680+12¢
Las Vegas, Nev.	4.350	3.575+8½¢	4.200+14¢
Little Rock, Ark.	3.600	3.100	3.375+3½¢
Madison, Wisc.	3.700	3.250	3.800+8¢
Manchester, N. H.	3.850	3.180	3.250+13¢
Memphis, Tenn.	3.800+10¢	3.100	3.450+11¢
Miami, Fla.	3.770	3.400	3.650+9¢
Mobile, Ala.	3.800	3.150+10¢	3.525+13½¢
Montgomery, Ala.	3.250	2.750	3.100+3¢
New Haven, Conn.	3.750+22¢	3.450+22¢	3.750+11¢
Norfolk, Va.	3.500	2.750	3.425+3½¢
Oakland, Calif.	3.750+15¢	3.550+20¢	3.910+14¢
Peoria, Ill.	4.075	3.700+3½¢	3.900+9¢
Portland, Maine	3.500	2.850	3.300+3¼¢
Providence, R. I.	3.750+10¢	3.250+10¢	3.550+13½¢
Reading, Pa.	3.800+12½¢	3.200	3.650+14¢
Richmond, Va.	3.500	2.750	3.275+3¼¢
Rochester, N. Y.	3.935+15¢	3.650	3.870+14¢
Rock Island, Ill.	3.900	3.260	3.650+3½¢
Santa Fe, N. Mex.	4.000	3.275	3.450+3½¢
Savannah, Ga.	3.500	3.100	3.450+3½¢
Schenectady, N. Y.	3.700+10¢	3.400+7½¢	3.900+14¢
Scranton, Pa.	3.750	3.175	3.500+16¢
Shreveport, La.	3.750	3.000	3.600+3½¢
Sioux Falls, S. Dak.	3.700	2.775	3.300+3¼¢
South Bend, Ind.	3.900+9¢	3.300	3.650+4¢
Spokane, Wash.	3.950+10¢	3.320+10¢	3.700+4¢
Springfield, Mass.	3.675+11¢	3.350+11¢	3.575+18½¢
Syracuse, N. Y.	3.900+20¢	3.520+20¢	3.800+13¼¢
Tampa, Fla.	3.500	3.025	3.500+3½¢
Washington, D. C.	4.000+9¢	3.600+9¢	4.200+14¼¢
Wichita, Kans.	3.850	3.150	3.600+3½¢
Wilmington, Del.	3.925+10¢	3.700	3.975+14¢
Worcester, Mass.	3.800+15¢	3.550+10¢	3.500+13½¢
York, Pa.	3.425	2.950	3.500+3½¢
Youngstown, Ohio	3.955+10¢	3.675	3.875+4¢

	Painter	Plasterer	Laborer
Albuquerque, N. Mex.	$2.875	$3.500	$2.175
Burlington, Vt.	1.750	3.750	2.050
Butte, Mont.	2.900+7¢	3.250	2.300
Charlotte, N. C.	2.000	2.635	1.395
Chattanooga, Tenn.	2.950	3.400	2.000
Cheyenne, Wyo.	3.000	3.250	2.070
Columbia, S. C.	2.500	2.750	
El Paso, Tex.	2.800	3.375	1.800
Erie, Pa.	3.150	3.600+10¢	2.600+17½¢
Evansville, Ind.	3.000+10¢	3.720	2.350+7½¢
Fargo, N. Dak.	2.600	3.400	2.000
Grand Rapids, Mich.	2.950+8¢	3.500	2.600+8¢
Hartford, Conn.	3.270+10¢	3.850+22¢	2.650+7¢
Houston, Tex.	3.100+7½¢	3.500+10¢	2.000
Knoxville, Tenn.	2.800	3.400	1.900
Lansing, Mich.	3.180+9¢	3.880+10¢	2.630+8¢
Las Vegas, Nev.	3.450+10¢	4.150+10¢	3.050
Little Rock, Ark.	2.700	3.300	1.700
Madison, Wisc.	3.140+9¢	3.500	2.700
Manchester, N. H.	2.505+10¢	3.850	2.500
Memphis, Tenn.	3.000	3.300	1.675
Miami, Fla.	3.120+10¢	3.770	1.770
Mobile, Ala.	3.125	3.500+10¢	1.840+10¢
Montgomery, Ala.	2.750	2.750	1.200
New Haven, Conn.	3.100+22¢	3.750+22¢	2.700+7¢
Norfolk, Va.	2.960	3.375	1.500
Oakland, Calif.	3.350+14½¢	3.640+15¢	2.865+10¢
Peoria, Ill.	3.400	3.975+10¢	3.050
Portland, Maine	2.200	3.250	2.200
Providence, R. I.	2.950+8½¢	3.775+10¢	2.525+7½¢
Reading, Pa.	2.800+11¢	3.450	2.260+5¢
Richmond, Va.	2.350	3.180	1.500
Rochester, N. Y.	3.400	3.935+15¢	2.815+7½¢
Rock Island, Ill.	3.100+10¢	3.550	2.630
Santa Fe, N. Mex.	2.875	3.500	2.175
Savannah, Ga.	2.625	2.750	1.650
Schenectady, N. Y.	3.000	3.700+10¢	2.600+7½¢
Scranton, Pa.	2.625	3.650	2.450
Shreveport, La.	2.900	3.500	1.650
Sioux Falls, S. D.	2.480	3.125	1.950
South Bend, Ind.	3.000	3.360+7½¢	2.475+7½¢
Spokane, Wash.	3.230+10¢	3.630+10¢	2.600+10¢
Springfield, Mass.	3.050+10¢	3.675+11¢	2.450+7½¢
Syracuse, N. Y.	3.100+10¢	3.775+20¢	2.750+20¢
Tampa, Fla.	2.750	3.500	1.575
Washington, D. C.	3.590+10¢	3.775+30¢	2.425+12½¢
Wichita, Kan.	2.875	3.500	2.300
Wilmington, Del.	3.200+10¢	3.800+15¢	2.150+7½¢
Worcester, Mass.	3.000+15¢	3.800+15¢	2.650+10¢
York, Pa.	2.550	3.350	1.975
Youngstown, Ohio	3.415+10¢	3.825+10¢	2.710+10¢

Base Rates on Compensation Insurance for Construction—July 1, 1959

Data Compiled by Herbert L. Jamison & Co., Insurance Advisors and Auditors, New York, N. Y.—(Base Rates in effect July 1, 1959—subject to increase or decrease according to experience ratings)

Classification of work	Ala.	Alas.	Ariz.	Ark.	Cal.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.
Carpentry 1-2 Family Residences	$1.47	$2.23	$3.44	$3.55	$2.61	$1.90	$2.99	$1.60	$2.99	$3.03	$1.89	$2.69	$2.06	1.66	1.51	2.34	1.96	4.84	1.23	2.33	3.34	2.58	2.65	3.65	2.30
Carpentry 3 stories or less	1.67	3.54	3.44	3.72	2.61	2.58	3.08	1.60	2.99	3.03	1.89	2.75	2.88	1.94	2.01	2.57	2.06	5.33	1.25	2.39	4.55	2.58	2.65	3.71	2.65
Carpentry Interior trim, cabinet work	.71	1.87	3.44	1.82	2.61	1.20	4.95	1.60	2.43	3.14	1.01	1.45	1.39	.97	.89	1.43	.98	2.70	.70	1.95	1.73	1.57	2.65	2.43	2.75
Carpentry General	1.96	4.78	3.44	4.00	5.23	3.26	3.66	1.60	4.26	4.81	3.03	3.82	3.61	2.65	2.67	4.70	2.33	6.08	2.28	4.14	8.64	2.58	5.24	6.04	3.81
Chimney Construction, brick, concrete	5.11	4.27	5.76	13.17	13.07	9.35	12.37	2.10	17.26	14.83	4.58	12.29	8.14	7.43	5.85	11.35	8.37	19.78	4.63	11.67	6.49	10.32	11.44	16.75	16.58
Concrete Work Bridges Culverts	3.04	7.48	6.05	5.43	6.01	5.48	5.24	2.10	10.36	5.53	4.11	6.14	4.40	2.49	4.15	5.03	2.36	6.73	3.27	4.34	4.47	3.98	5.77	9.12	6.40
Concrete Work 1-2 Family Residences	.91	4.92	2.66	1.64	1.27	1.51	2.42	2.10	4.32	2.80	.85	2.52	1.06	1.08	1.09	1.59	1.19	2.36	1.26	2.24	2.85	1.74	2.05	2.27	1.88
Concrete Work General	1.59	4.27	2.66	4.46	3.37	3.46	4.81	2.10	5.61	4.70	2.25	2.66	3.03	2.16	1.78	4.51	1.55	5.73	1.52	4.32	5.81	3.22	2.49	3.76	4.77
Concrete or Cement Walks, Floors, Sidewalks	.71	2.78	2.66	1.64	1.30	1.38	2.90	1.60	1.87	2.83	1.32	1.80	1.39	.95	1.18	1.97	1.07	3.07	.88	2.67	3.24	1.31	1.95	2.02	1.97
Electrical Wiring Inside	.84	1.35	1.87	1.67	1.65	1.45	1.55	.90	2.25	2.36	1.37	1.91	1.12	.99	.85	1.33	.86	2.06	.71	1.66	1.58	1.26	1.30	2.07	1.81
Excavation Earth	2.10	4.65	3.12	3.46	2.10	3.43	4.36	1.95	4.03	3.97	2.70	4.47	2.42	1.83	1.89	3.24	2.22	3.97	1.32	3.30	3.94	2.78	4.37	4.97	3.93
Excavation Rock	3.15	7.04	5.12	5.85	6.13	6.02	8.01	1.95	7.24	9.11	4.00	5.39	7.31	4.14	2.76	7.20	5.16	10.69	3.04	5.83	7.98	4.87	4.40	9.87	7.70
Glazing	1.95	3.15	2.89	4.67	3.91	3.40	4.79	1.25	5.70	4.03	2.78	4.35	2.66	2.39	2.36	4.06	2.86	5.72	1.87	4.38	4.19	3.75	4.37	6.07	4.06
Insulating	.84	2.98	2.52	1.94	3.20	1.86	2.18	1.60	2.45	2.39	.91	2.47	2.03	1.21	1.29	1.81	.99	3.67	1.16	1.76	3.07	1.50	3.10	2.73	2.37
Lathing	.91	2.86	2.50	2.44	1.68	1.60	2.42	.75	2.63	2.25	1.39	1.97	1.06	1.25	1.15	1.80	1.29	3.51	.92	2.08	3.04	1.18	1.65	3.13	2.21
Masonry	.93	3.92	2.20	1.64	2.36	1.51	2.70	.80	2.27	2.65	.94	2.58	1.64	1.26	1.09	1.65	1.21	2.36	1.28	2.02	2.94	1.70	1.60	2.30	2.47
Painting and Decorating	1.14	3.17	2.20	2.41	2.59	1.65	3.12	1.30	5.01	3.08	1.49	3.03	1.85	1.83	1.41	1.92	1.66	3.48	1.16	3.27	2.96	2.19	2.14	3.13	2.91
Pile Driving	4.90	9.60	11.56	12.53	11.08	8.92	4.70	5.70	11.62	10.97	6.77	11.23	7.13	5.48	4.36	10.74	6.47	13.36	2.32	6.64	7.25	6.00	7.40	15.99	8.84
Plastering	.84	2.53	2.52	1.94	1.68	1.86	2.18	.75	2.45	2.70	.91	2.47	1.11	1.21	1.29	1.81	.99	2.52	1.16	1.76	2.34	1.50	1.65	2.73	1.53
Plumbing	.75	1.53	2.08	1.98	1.83	1.66	1.70	.70	2.19	2.22	1.59	1.42	1.50	1.22	1.14	1.62	1.06	3.11	.78	1.74	1.86	1.40	2.09	2.06	2.92
Roofing	2.59	5.98	5.60	7.06	6.34	5.74	7.47	1.75	7.20	6.99	3.42	8.37	5.47	4.29	4.67	5.78	3.39	6.42	4.04	7.07	13.54	4.98	8.07	9.52	6.82
Sheet Metal Work	1.24	2.23	2.20	3.12	2.27	1.65	2.63	1.75	2.55	2.97	1.71	2.33	1.59	1.70	1.49	2.05	1.69	3.34	.97	2.24	2.56	2.00	1.97	5.82	2.49
Steel Erection Doors & Sash	1.27	4.00	1.47	3.02	2.32	2.28	3.95	5.50	4.26	3.06	1.66	2.73	1.91	1.93	1.59	2.59	1.84	5.06	1.30	2.86	3.43	2.24	2.84	4.20	2.82
Steel Erection Interior Ornament	1.27	4.00	1.47	3.02	2.32	2.28	3.95	5.50	4.26	3.06	1.66	2.73	1.91	1.93	1.59	2.59	1.84	5.06	1.30	2.86	3.43	2.24	2.84	4.20	2.82
Steel Erection Structural	5.21	28.63	12.15	13.87	11.18	10.93	9.96	5.50	27.63	15.48	9.77	15.58	8.45	5.65	11.44	11.36	7.73	14.72	5.36	12.02	18.18	11.51	11.80	12.59	11.97
Steel Erection Dwelling 2 stories	2.90	11.62	3.96	7.29	4.44	5.83	6.95	5.50	9.17	7.18	4.36	7.82	5.53	3.19	3.94	6.80	3.83	8.95	2.71	6.42	10.34	4.05	7.09	8.98	7.70
Steel Erection General	3.54	13.08	12.15	9.19	6.27	10.93	7.18	5.50	17.72	10.14	8.19	11.72	8.45	5.65	5.69	7.29	5.02	14.72	3.41	9.46	12.93	5.61	8.44	11.26	10.44
Tile Work Interior	.61	.84	1.71	1.56	1.00	1.03	1.57	.55	2.41	1.47	.91	1.24	.85	.84	.77	1.24	.82	1.87	.63	1.35	2.11	1.08	1.44	2.05	1.50
Timekeepers and Watchmen	1.38	4.85	1.53	2.82	2.25	2.31	3.91	B	3.71	3.84	2.01	3.00	2.77	1.98	1.68	2.95	1.93	5.20	1.39	3.21	5.81	2.65	3.48	3.85	4.25
Waterproofing Interior Brush	1.14	3.17	2.20	2.41	2.59	1.65	3.12	1.30	5.01	3.08	1.49	3.03	1.85	1.83	1.41	1.92	1.66	3.48	1.16	3.27	2.96	2.19	2.14	3.13	2.91
Waterproofing Trowel Interior	.84	2.53	2.52	1.94	1.68	1.86	2.18	.75	2.45	2.70	.91	2.47	1.11	1.21	1.29	1.81	.99	2.52	1.16	1.76	2.34	1.50	1.65	2.73	1.53
Waterproofing Trowel Exterior	.93	3.92	2.20	1.64	2.36	1.51	2.70	.80	2.27	2.65	.94	2.58	1.64	1.26	1.09	1.65	1.21	2.36	1.28	2.02	2.94	1.70	1.60	2.30	2.47
Waterproofing Pressure Gun	1.59	4.27	2.66	4.46	3.37	3.46	4.81	2.10	5.61	4.70	2.25	2.66	3.03	2.16	1.78	4.51	1.55	5.73	1.52	4.32	5.81	3.22	2.49	3.76	4.77
Wrecking	7.14	13.04	13.33	18.58	21.00	14.74	14.99	9.10	18.65	16.78	8.85	17.70	14.19	5.92	7.82	11.71	10.09	23.73	7.66	17.80	20.80	10.13	16.55	19.00	18.93

Classification of work	Mont.	Neb.	Nev. (G)	N. H.	N. J.	N. M.	N. Y.	N. C.	N. D. (G)	Ohio (G)	Okla.	Ore. (G)	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash. (G)	W. Va. (G)	Wis.	Wyom. (G)
Carpentry 1-2 Family Residences	3.25	2.14	4.45	1.89	3.20	3.40	3.00	2.48	2.56	1.75	4.67	4.45	1.40	2.82	2.56	1.04	2.72	3.71	2.16	2.42	1.60	3.87	1.96	2.03	1.90
Carpentry 3 stories or less	3.36	2.60	4.60	2.05	3.20	4.29	4.40	3.04	2.56	2.04	6.04	4.55	1.40	3.22	2.59	1.07	2.75	3.71	2.16	2.46	1.75	3.98	2.06	2.53	1.90
Carpentry Interior trim, cabinet work	1.63	1.10	2.23	1.04	1.70	1.78	4.40	1.56	2.56	1.02	4.52	2.06	1.40	2.32	1.55	.78	1.54	3.34	2.16	1.02	.91	1.27	.98	2.03	1.90
Carpentry General	5.69	3.06	7.80	2.73	4.40	6.45	4.40	4.10	5.07	2.79	7.05	5.23	1.40	6.05	5.52	2.62	3.54	4.99	2.16	3.03	1.90	5.11	2.33	3.40	1.90
Chimney Construction, brick, concrete	14.82	8.29	20.30	7.43	11.20	12.58	23.60	11.14	11.06	7.73	19.51	7.60	1.55	19.35	13.51	4.25	11.04	14.93	9.35	7.03	5.57	9.74	8.37	10.25	8.23
Concrete Work Bridges Culverts	6.71	3.35	9.19	4.42	5.60	8.46	6.10	4.97	5.58	2.62	11.83	6.38	1.55	7.20	8.85	2.71	4.21	8.39	4.78	4.28	2.05	5.78	2.36	4.20	4.21
Concrete Work 3 stories or less	2.57	1.33	3.52	1.72	2.50	1.62	5.10	1.00	1.98	1.14	2.75	3.97	1.55	3.02	1.36	.94	1.54	3.11	2.05	2.12	.82	3.66	1.19	1.46	1.80
Concrete Work General	4.96	3.94	6.80	2.39	5.60	2.89	5.10	2.88	2.41	2.28	11.10	4.56	1.55	8.44	2.80	2.25	2.92	5.40	2.78	2.54	2.27	4.20	1.55	2.31	2.45
Concrete or Cement Walks, Floors,	2.02	1.55	2.77	1.28	2.30	2.16	2.70	1.35	1.89	1.00	3.10	2.24	1.20	2.61	1.90	.94	1.45	2.95	1.10	1.27	1.02	1.94	1.07	1.73	.97
Electrical Wiring	1.62	1.12	2.22	1.35	2.00	1.97	2.50	1.26	1.26	1.04	2.55	2.15	.85	1.08	1.98	.76	1.40	2.19	1.53	1.07	.82	1.95	.86	1.17	1.35
Excavation Earth	5.35	2.29	7.33	3.61	3.70	3.67	5.20	3.09	4.23	1.93	6.59	5.08	1.85	3.78	3.65	1.51	3.65	4.67	2.92	2.74	1.69	4.40	2.22	3.21	2.57
Excavation Rock	7.70	4.80	10.55	5.48	8.60	6.48	8.50	9.64	4.25	5.36	7.50	7.27	1.85	9.56	7.57	2.75	5.15	9.75	3.33	4.68	3.71	9.32	5.16	7.07	2.93
Glazing	4.99	3.10	6.84	2.87	4.40	4.87	4.50	3.96	4.23	2.52	5.54	4.70	1.40	6.88	5.02	1.89	4.03	3.34	1.16	2.81	1.86	4.35	2.86	3.66	1.02
Insulating	2.80	1.27	3.84	1.69	4.80	2.93	4.40	1.48	3.00	1.28	5.28	4.00	1.40	2.97	1.92	1.21	1.97	4.35	2.42	1.65	.96	3.40	.99	2.47	2.13
Lathing	2.23	1.45	3.06	1.36	2.20	2.28	2.60	1.88	1.60	1.32	2.83	3.90	.75	3.10	2.33	.94	2.07	2.16	1.72	1.32	1.25	3.30	1.29	1.23	1.51
Masonry	2.67	1.36	3.66	1.75	3.30	2.39	4.20	1.02	1.55	1.33	2.75	4.07	1.20	3.11	1.38	.97	1.54	3.11	1.53	2.16	.87	3.77	1.21	1.63	1.35
Painting and Decorating	3.84	1.98	5.26	2.96	4.90	3.01	4.80	2.28	2.07	1.93	3.55	4.55	2.10	2.35	3.39	1.56	2.10	2.82	1.57	1.91	1.69	4.19	1.66	1.94	1.38
Pile Driving N.O.C.	13.04	7.02	17.86	3.76	7.40	12.76	8.40	8.23	7.16	5.78	17.64	11.09	2.15	7.87	9.21	5.10	11.09	13.96	5.59	3.67	4.88	9.79	6.47	8.37	4.92
Plastering	2.80	1.27	3.84	1.69	2.20	2.93	3.70	1.48	1.60	1.28	3.49	4.00	.75	2.97	1.92	1.21	1.97	2.79	2.42	1.65	.96	3.40	.99	1.42	2.13
Plumbing	1.71	1.11	2.34	1.26	2.40	2.35	3.00	1.56	2.02	1.29	2.68	1.90	.85	1.76	1.83	.79	1.45	2.74	1.39	1.36	.98	1.72	1.06	1.73	1.22
Roofing	9.64	5.40	13.21	6.57	9.70	8.12	8.90	6.13	7.80	4.52	18.03	10.87	2.60	9.05	5.28	3.63	5.02	8.52	4.89	5.36	3.04	11.97	3.39	10.68	4.30
Sheet Metal Work	2.69	2.04	3.69	1.64	2.45	2.84	4.30	2.39	1.90	1.79	3.36	4.38	2.60	2.77	3.15	1.13	2.43	4.18	1.72	1.65	1.69	3.75	1.69	1.91	1.51
Steel Erection Doors Sash	3.13	2.05	4.29	1.92	4.90	3.20	3.20	2.65	2.75	2.03	5.26	2.33	4.20	4.37	2.98	1.33	2.91	3.71	1.72	1.88	1.60	2.73	1.84	3.06	1.51
Steel Erection Interior Ornament	3.13	2.05	4.29	1.92	3.20	3.20	3.20	2.65	2.75	2.03	5.23	2.33	4.20	4.37	2.98	1.33	2.91	3.71	1.72	1.88	1.60	2.73	1.84	3.06	1.51
Steel Erection Structural	19.54	8.58	26.77	8.76	14.90	9.51	13.80	10.29	11.41	5.93	18.22	17.25	4.20	17.37	13.66	5.80	9.30	16.71	6.61	10.11	5.91	15.86	7.73	7.56	5.82
Steel Erection Dwelling 2 stories	8.39	5.11	11.49	4.25	6.00	8.83	4.40	5.61	6.86	3.36	13.09	8.10	4.20	13.08	8.92	2.77	4.65	3.46	5.44	4.81	2.92	7.51	3.83	4.66	4.70
Steel Erection General	13.30	7.54	18.36	7.50	7.10	9.51	10.80	6.95	8.16	5.93	18.22	11.03	4.20	14.70	9.72	2.93	5.76	8.08	6.61	7.23	3.86	10.56	5.02	8.22	5.82
Tile Work Interior	1.37	.97	1.88	.91	1.60	1.57	2.10	1.08	1.39	.89	2.00	1.48	.65	1.97	1.44	.68	1.05	4.70	1.84	.94	.64	1.38	.82	.94	1.62
Timekeepers and Watchmen	3.13	2.24	4.29	2.03	A	3.59	3.60	2.77	3.37	2.09	4.10	3.99	B	4.82	2.90	1.54	2.97	1.76	2.37	2.03	1.63	4.18	1.93	3.03	2.09
Waterproofing Interior Brush	3.84	1.98	5.26	2.96	4.90	3.01	4.80	2.28	2.07	1.93	3.55	4.55	2.10	2.35	3.39	1.56	2.10	2.82	1.57	1.91	1.69	4.19	1.66	1.94	1.38
Waterproofing Trowel Interior	2.80	1.27	3.84	1.69	2.20	2.93	3.70	1.48	1.60	1.28	3.49	4.00	.75	2.97	1.92	1.21	1.97	2.79	2.42	1.65	.96	3.40	.99	1.42	2.13
Waterproofing Trowel Exterior	2.67	1.36	3.66	1.75	3.30	2.39	4.20	1.02	1.55	1.33	2.75	4.07	1.20	3.11	1.38	.97	1.54	3.11	1.53	2.16	.87	3.77	1.21	1.63	1.35
Waterproofing Pressure Gun	4.96	3.94	6.80	2.39	5.60	2.89	5.10	2.88	2.41	2.28	11.10	4.56	1.55	8.44	2.80	2.25	2.92	5.40	2.78	2.54	2.27	4.20	1.55	2.31	2.45
Wrecking	20.72	12.80	28.39	11.61	19.10	23.24	A	13.19	16.00	6.24	18.04	23.11	12.00	24.16	13.73	17.93	13.23	23.66	19.59	11.39	6.31	21.52	10.09	6.78	17.24

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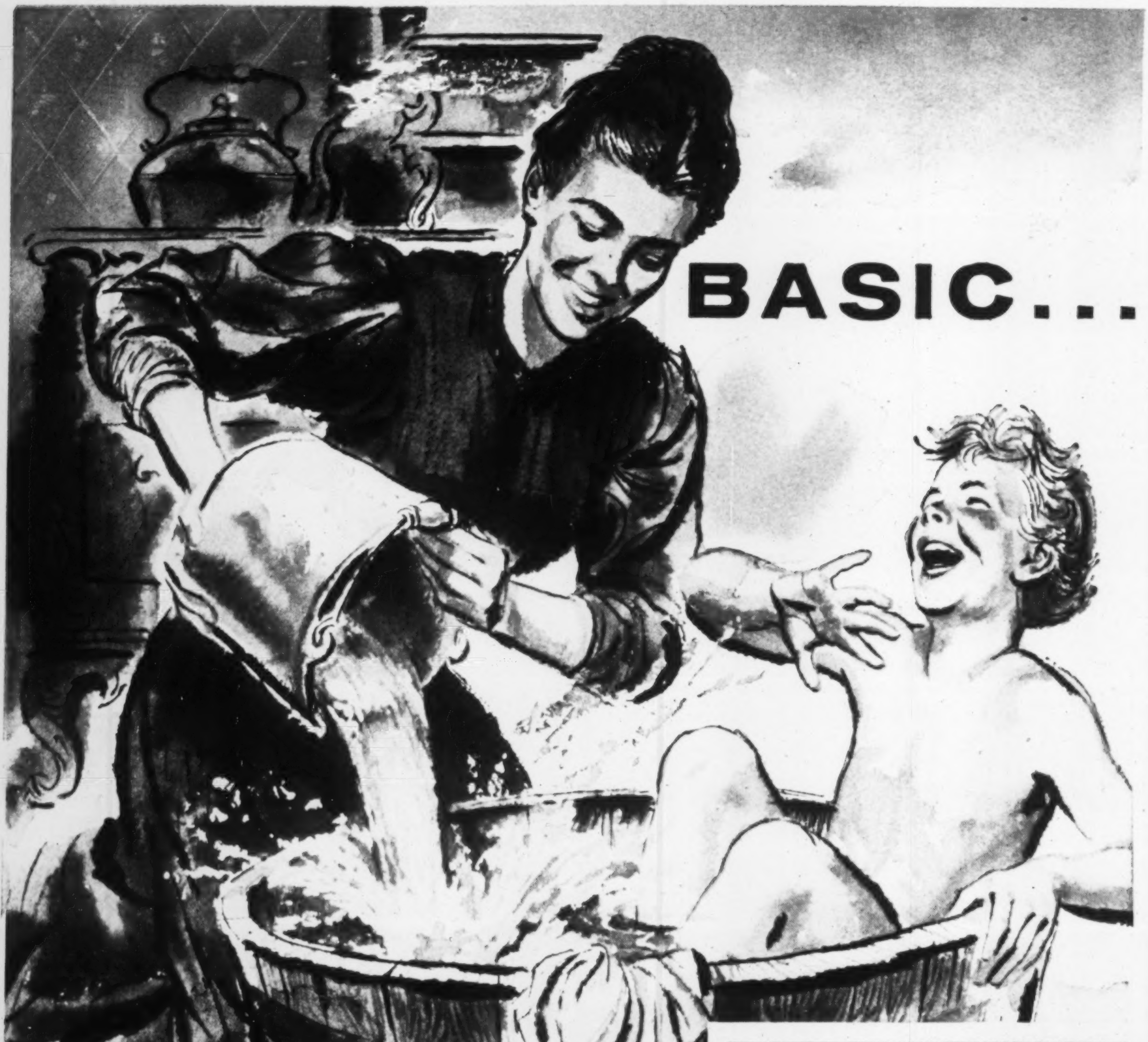

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EVERYDAY IS SATURDAY TODAY. With clean, pure water... carried through cast iron pipe... the shower or bath today is an accepted part of American living.

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cast iron
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FOR WATER, SEWERAGE AND
U. S. PIPE AND FOUNDRY COMPANY

but better than ever today!

Mine-to-main control assures U. S. Pipe quality in service

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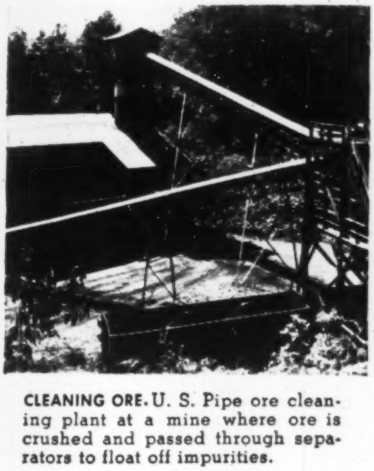
Quality is built into U. S. cast iron pipe.



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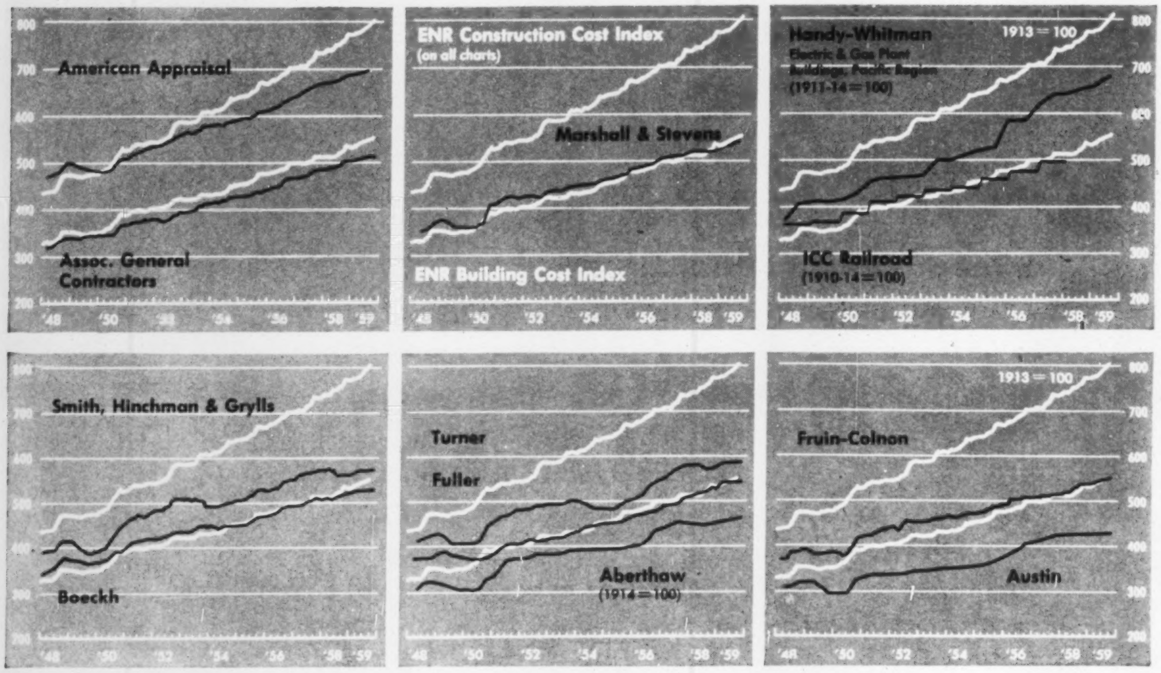
3rd Quarterly Cost Roundup

Building Cost & Price Indexes



Costs Push Prices to Record

Building costs are rising to new highs this year and building contractors' selling prices are following suit.

Since the second half of '58, in fact, cost and price indexes are up across the board (see table below, charts above). This contrasts with the first half of last year when three indexes—Smith Hinchman & Grylls, Aberthaw Construction Co. and Turner Construction Co.—turned down temporarily.

Basic reasons for the record selling prices are peak wage rates and materials prices, though record equipment prices and rental rates, higher taxes, interest rates and perhaps slightly healthier profit margins have contributed to this year's uptrend.

A slower advance so far in '59 in contractor price indexes than for the weighted cost indexes shown here, indicates that building contractors are finding new ways to raise productivity.

This they've got to do to avoid having some potential customers priced out of the market.

Yet the indexes show that while building contractors' efforts to cut costs have been successful over the short run of a year or two, they have been able to offset only a relatively small part of the long-term rise in basic materials prices and wage rates. Since 1913, the Fuller, Fruin-Colnon and Turner building price indexes increased as much or more than the ENR Building Cost Index. Only the Aberthaw and Austin indexes rose less.

During the 10 years since 1949, the story is roughly the same. The average of the Austin, Fuller, Fruin-Colnon and Turner price indexes is 43% higher, while the ENR Building Cost Index is up 58%.

While basic costs should be steady for the rest of '59, they will rise in 1960, pushing contractor prices higher.

Building Cost & Price Indexes, 1913 = 100

	Weighted Cost Indexes								Contractors Price Indexes				
	GENERAL CONSTRUCTION		INDUSTRIAL		COMM'L AND FACTORY	PUBLIC UTILITY, PACIFIC	GENERAL BLDG.		INDUSTRIAL			GENERAL	
Yr & Month	ENR Constr.	Assoc. Gen. Contr.	American Appraisal Company	Marshall & Stevens	E.H. Boeckh cd	Handy-Whitman g	ENR Bldg.	Smith Hinchman & Grylls ae	Aberthaw b	Austin e	Fruin-Colnon	Fuller	Turner f
1926	208	197	217	185	181	191	185	185	197	185	218	202	195
1932	157	171	155	130	144	145	141	128	168	117	178	157	136
1939	236	188	200	183	191	192	197	199	190	152	208	195	182
1949	477	342	390	365	369	416	352	395	312	307	382	382	413
1955	660	439	608	479	465	524	469	522	398	366	483	462	498
1956	692	462	635	503	489	588	491	544	427	400	503	482	544
1957	724	483	663	515	507	634	509	568	453	420	512	504	576
1958	759	499	682	528	517	650	525	565	453	427	530	526	576
1959													
Jan.	778	505	693		527	660	536	566	...	...	540	540	584
Feb.	779	506	693		527	...	537	568	...		541	...	...
Mar.	781	507	694	538	527	...	540	570	...	427	542	...	...
Apr.	784	509	696		531	...	543	570	...	...	542	540	584
May	790	511	703		534	...	544	572			556	...	...
Jun.	795	516	703	544	538	...	548	574	466	429	556	...	...
Jul.	807	522	707		539		552	574	...	...	556	549	589
Aug.	814	522					554		...	...	556	...	...
Sep.	813				...	...	556	...	...	...	...	...	...

•a Includes adjustment for estimated changes in productivity •b 1914 = 100 •c Incl contractor overhead, profit and adjustment for estimated changes in productivity •d Reported on 1926–29 base •e Reported on 1926 base •f Reported on 1939 base •g Reinf conc bldg, 1911–14 = 100 FOR EXPLANATION OF THESE INDEXES SEE ENR MAR. 19, 1959, p. 80

ENR Indexes for 22 Cities

Construction Cost Index, 1913=100

City	June '49	June '56	June '57	1958 Jun	1958 Sep	1958 Dec	1959 Mar	1959 Jun	1959 Sep
Atlanta	345	502	523	558	584	584	594	594	624
Baltimore	425	595	643	701	708	709	711	711	745
Birmingham	389	549	556	593	599	619	622	624	652
Boston	526	744	746	793	809	807	810	832	836
Chicago	526	788	831	838	857	859	866	875	924
Cincinnati	487	680	713	746	780	777	785	790	818
Cleveland	514	809	856	849	874	880	893	919	925
Dallas	398	509	525	553	573	573	573	573	604
Denver	482	670	702	725	731	731	731	742	742
Detroit	489	800	823	852	889	892	897	962	962
Kansas City	501	709	735	762	768	768	773	793	803
Los Angeles	478	733	731	814	822	824	828	839	877
Minneapolis	504	747	781	818	825	824	839	855	860
New Orleans	379	564	572	591	602	617	617	620	635
New York	534	819	852	912	953	940	968	978	1016
Philadelphia	492	737	780	795	803	790	791	804	795
Pittsburgh	492	688	762	819	827	827	827	840	858
St. Louis	508	756	789	840	849	844	854	891	880
San Francisco	478	726	758	798	820	812	817	824	858
Seattle	530	720	749	789	799	799	830	836	839
Montreal	408	560	586	603	603	604	603	610	620
Toronto		562	611	605	622	638	642	671	666
U. S. Average	**474**	**692**	**721**	**757**	**773**	**774**	**781**	**790**	**813**

Building Cost Index, 1913=100

City	June '49	June '56	June '57	1958 Jun	1958 Sep	1958 Dec	1959 Mar	1959 Jun	1959 Sep
Atlanta	308	424	442	461	472	472	477	477	497
Baltimore	349	491	503	527	534	542	543	544	553
Birmingham	329	447	457	480	488	493	496	498	513
Boston	362	503	518	528	547	542	551	560	566
Chicago	349	500	511	535	560	562	569	578	586
Cincinnati	356	475	489	502	519	515	525	529	540
Cleveland	332	508	522	515	527	533	539	554	558
Dallas	322	424	439	459	469	469	472	474	490
Denver	351	488	510	525	530	532	532	537	540
Detroit	336	514	535	545	573	574	579	599	599
Kansas City	357	497	503	527	533	533	538	548	558
Los Angeles	339	491	496	514	527	530	536	552	560
Minneapolis	361	515	530	547	554	553	554	564	569
New Orleans	325	457	467	477	485	494	494	499	508
New York	398	556	578	601	622	609	629	639	652
Philadelphia	394	538	560	569	581	569	570	583	582
Pittsburgh	375	500	541	573	593	595	595	595	610
St. Louis	375	522	538	558	567	563	576	590	579
San Francisco	341	476	486	507	533	533	538	550	551
Seattle	328	444	456	470	484	484	493	499	508
Montreal	316	437	451	449	449	449	449	450	457
Toronto		450	469	468	469	479	482	500	497
U.S. Average	**349**	**489**	**504**	**521**	**535**	**535**	**540**	**548**	**556**

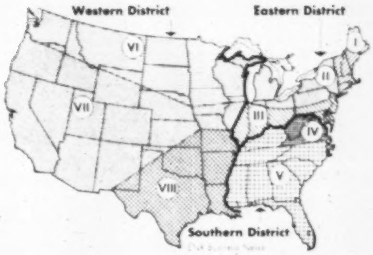
Converting ENR Indexes* To Other Base Years

To convert from base 1913=100 to base below	Divide 1913=100 values of Construction Cost Index by . . .	Divide 1913=100 values of Building Cost Index by . . .
1949=100	4.7702	3.5179
1947-49=100	4.5033	3.3642
1940=100	2.4196	2.0281
1939=100	2.3551	1.9744
1926=100	2.0803	1.8496
1925-29=100	2.0695	1.8491
1926-29=100	2.0702	1.8747
1929=100	2.0702	1.9086
1910-14=100	0.9380	0.9477
1924=100	2.1536	1.8578
1923-25=100	2.1205	1.8491
1914=100	0.8856	0.9191
1911=100	0.9343	0.9414

*Applies to 20-cities index, not to individual cities

Monthly Index History

Historical record of ENR Cost Indexes, graphs and tables for all years 1913-56 is in the supplement to ENGINEERING NEWS-RECORD, *Oct. 17, 1957 by Business News Department, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y. Reprints are available at $1 each. Selected years through 1958 are in supplement to ENR March 19, 1959. Reprints available at 50 cents each. Lower rates on 10 or more.*



Railroad Cost Index—

Road Construction

Interstate Commerce Commission —1910-14 = 100

Dist & Reg.		Ratio*	Index 1926	1932	1939	1945	1949	1957	1958
I to VIII		**66.66**	**167**	**131**	**137**	**197**	**270**	**370**	**377**
I	East	73.53	173	134	140	206	287	381	388
II	East	64.48	168	133	141	202	283	386	394
III	East	63.85	168	132	142	205	286	388	395
IV	South	62.86	163	126	131	195	259	358	365
V	South	66.85	165	129	136	195	265	366	373
VI	West	71.24	164	129	132	190	253	355	360
VII	West	66.57	166	131	133	188	256	358	364
VIII	West	69.00	168	133	140	198	270	369	376

Indexes represent territorial index factors and are not for determining unit reproduction costs for individual roads.

* Ratio is per cent of accounts included in road construction to total of all accounts, at 1910-14 prices, computed in 1953. Ratios computed in other years are in bottom table.

By Accounts	1926	1932	1939	1945	1949	1957	1958
Engineering	166	131	137	197	270	370	377
Other rt of way exp	159	121	135	201	258	315	324
Grading	153	106	90	144	139	159	159
Tunnels & subways	178	119	140	236	339	404	405
Brdg. culv & trestl	170	122	149	240	374	482	491
Elevated structures	165	129	149	249	382	529	539
Ties	173	144	158	241	302	381	381
Rails	144	140	136	152	245	406	414
Other track material	177	163	167	176	278	426	449
Ballast	175	146	143	181	254	348	348
Track laying & surf	188	164	165	273	366	541	543
Fences, snow sheds	178	147	141	189	279	393	395
Station & office bldgs	184	141	166	244	368	500	515
Roadway buildings	187	140	162	258	386	504	520
Water stations	182	147	166	227	327	448	468
Fuel stations	180	144	159	242	357	483	503
Shops & eng houses	185	137	165	248	379	510	526
Grain elevators	190	137	164	236	367	503	520
Storage warehouses	189	137	166	253	377	517	532
Wharves & docks	177	136	153	255	350	453	464
Coal & ore. wharves	174	136	153	236	341	445	457
Tel & Tel lines	157	121	129	173	250	356	358
Sgnls & intrlocks	169	130	143	176	226	347	351
Power plants	186	138	167	246	386	537	552
Powr trnsmissn sys	176	143	148	180	266	402	410
Misc structures	186	141	161	229	378	510	527
Roadway mach	156	138	170	194	280	411	427
Roadway small tools	190	155	180	200	315	520	510
Public impr const	169	131	142	217	321	397	403
Shop mach	197	163	207	236	322	486	511
Power plant mach	165	138	178	181	242	378	397
Work equipment	180	165	200	254	348	503	530

Ratio of RR costs

	Computed 1930	1949	1953
Road construction	68.75	68.40	66.66
Equipment, work	0.66	0.56	0.54
Equipment, rolling & floating	23.03	24.47	26.38
General	7.56	6.57	6.42
Total	100.00	100.00	100.00

Indexes for 1958, by Engineering Section, Bureau of Accounts, Cost Finding and Valuation, Interstate Commerce Commission, include items developed from analysis of major construction contracts over a period of years. Indexes for material accounts are based on studies of carriers' returns to Valuation Order 14, joint studies made with various subcommittees of President's Conference Committee, engineering and trade publications, contracts covering major construction projects, and information furnished by individual carriers.

Handy-Whitman Cost Indexes for Public Utilities

Whitman, Requardt & Associates, Baltimore

Individual series for 103 cost elements reported semi-annually. Weighting is based on wide experience in cost analysis of plants and construction. Materials prices are from ENR, Iron Age and manufacturers; Labor rates from BLS, unions and builders associations.

Building (1911-14 = 100)

(Complete Index reports 14 Items)
A relates to Reinforced Concrete Bldg.; B relates to Brick Bldg.

	Jul '26	Jul '32	Jul '39	Jul '42	Jul '45	Jul '49	Jul '56	Jul '57	Jan '58	Jul '59	Jan '59	Jul '59
North Atlantic Division												
A	213	159	207	253	260	433	609	676	679	688	694	710
B	229	173	214	250	265	421	572	616	622	633	639	652
South Atlantic Division												
A	215	164	205	267	275	453	649	712	717	721	729	746
B	228	176	211	262	277	431	598	639	645	653	653	660
North Central Division												
A	201	154	200	242	253	418	603	663	664	673	679	698
B	211	164	203	234	250	390	554	597	600	612	616	634
South Central Division												
A	191	144	187	236	243	412	573	630	634	641	647	662
B	204	154	191	227	238	382	535	578	584	594	600	613
Plateau Division												
A	197	149	194	235	239	397	563	625	627	636	637	649
B	210	163	200	227	233	395	532	573	564	549	552	585
Pacific Division												
A	190	148	192	241	248	415	588	644	644	655	660	683
B	197	156	193	231	242	385	539	578	581	596	601	623

Gas Plant (1911 = 100)

(Complete Index reports 25 Items)
A relates to Total Constr. & Equip.; B relates to Mech. Equip. Exclusive of Gas Holders.

	Jul '26	Jul '32	Jul '39	Jul '42	Jul '45	Jul '49	Jul '56	Jul '57	Jan '58	Jul '58	Jan '59	Jul '59
North Atlantic Division												
A	230	188	249	275	288	464	672	717	734	745	760	776
B	212	195	278	299	301	481	715	799	816	823	849	854
South Atlantic Division												
A	222	175	230	268	282	453	651	693	714	721	737	749
B	212	195	278	299	301	482	715	799	816	823	849	854
North Central Division												
A	218	178	232	254	269	434	630	672	684	694	706	719
B	212	195	278	299	301	481	715	799	816	823	849	854
South Central Division												
A	200	160	217	249	261	419	595	632	648	655	667	677
B	212	195	278	299	301	487	715	799	816	823	849	854
Plateau Division												
A	202	166	217	237	243	398	575	612	623	630	641	653
B	212	195	278	299	301	481	715	799	816	823	849	854
Pacific Division												
A	206	177	228	257	266	428	620	661	673	688	699	715
B	212	195	278	299	301	481	715	799	816	823	849	854

Electric Light & Power (1911 = 100)

(Complete Index reports 64 Items)
A relates to Total Constr. & Equip. All steam; B to Accessory Electric Equipment; C to Sub-Sta. Equip.

	Jul '26	Jul '32	Jul '39	Jul '42	Jul '45	Jul '49	Jul '56	Jul '57	Jan '58	Jul '58	Jan '59	Jul '59
North Atlantic Division												
A	194	176	225	248	259	400	577	610	620	627	635	641
B	196	186	224	239	237	341	490	519	536	543	545	548
C	178	168	203	216	218	312	444	464	477	484	485	487
South Atlantic Division												
A	201	180	233	267	273	422	616	651	662	667	678	685
B	203	191	240	262	248	356	512	546	562	564	571	576
C	183	173	218	237	228	325	466	491	502	506	510	515
North Central Division												
A	187	174	218	238	243	374	555	587	595	601	609	616
B	188	186	223	231	218	307	451	478	492	497	501	507
C	171	169	202	209	200	280	409	427	438	444	446	451
South Central Division												
A	183	171	218	246	251	390	567	601	611	617	623	629
B	189	190	230	248	235	340	488	517	533	539	543	547
C	171	173	209	226	217	311	438	457	470	476	478	482
Plateau Division												
A	188	171	219	236	241	378	553	594	601	604	612	623
B	196	188	232	236	225	323	457	494	508	509	513	526
C	177	171	211	212	207	294	413	442	451	453	455	467
Pacific Division												
A	178	163	215	242	244	380	557	590	600	608	617	625
B	177	170	222	240	225	323	471	495	517	520	528	537
C	161	155	202	219	208	297	435	451	469	473	480	487

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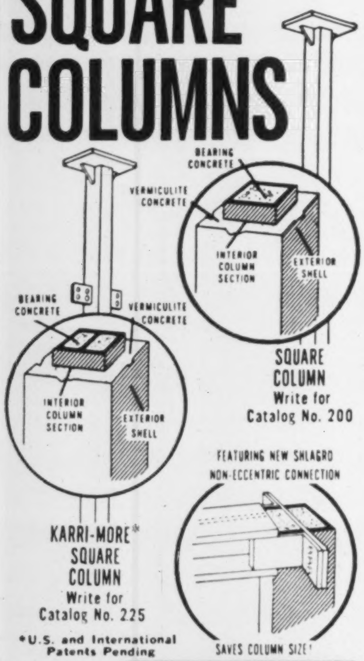

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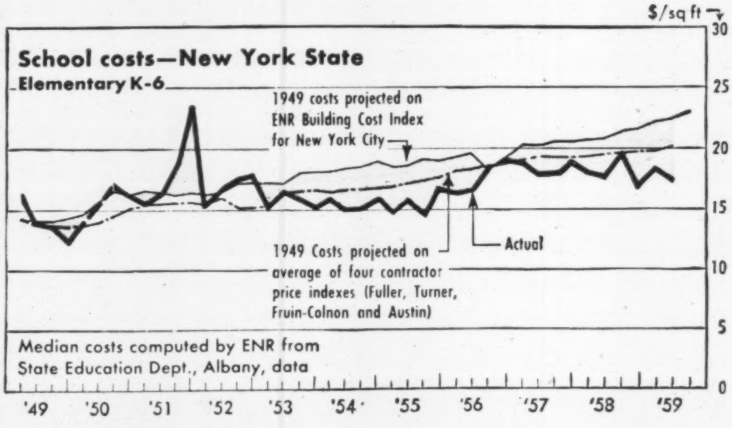
School Contract Costs



School Bargains in New York

Contract prices of new elementary schools in New York State dropped in the second quarter of '59 to the lowest median cost since 1956, according to cost data for a sample of six kindergarten-6th grade schools analyzed by the State Education Department's Division of School Buildings and Grounds.

The median cost of four schools with one large construction unit (gym, auditorium, cafeteria or combination building) dropped to $17.68 per sq ft. And the average of two schools with two large units fell to $17.00 per sq ft.

These contract costs are well below the previous highs of $20.80 (with one large unit) and $19.85 (two large units), set in 1957 and 1958, respectively.

Moreover, the extremes of the cost range are also down. The $19.00 per sq ft cost in the second quarter for schools with one large unit ranks among the lowest maximums in the past 36 months. And the second quarter minimum for these schools also is one of the lowest in this period.

The chart above shows how contract costs of new elementary schools of the K-6 type have been dropping, while basic costs and building contractor selling price indexes have moved steadily upward.

Contractors appear to have saved these local school boards some 10% on their construction bills.

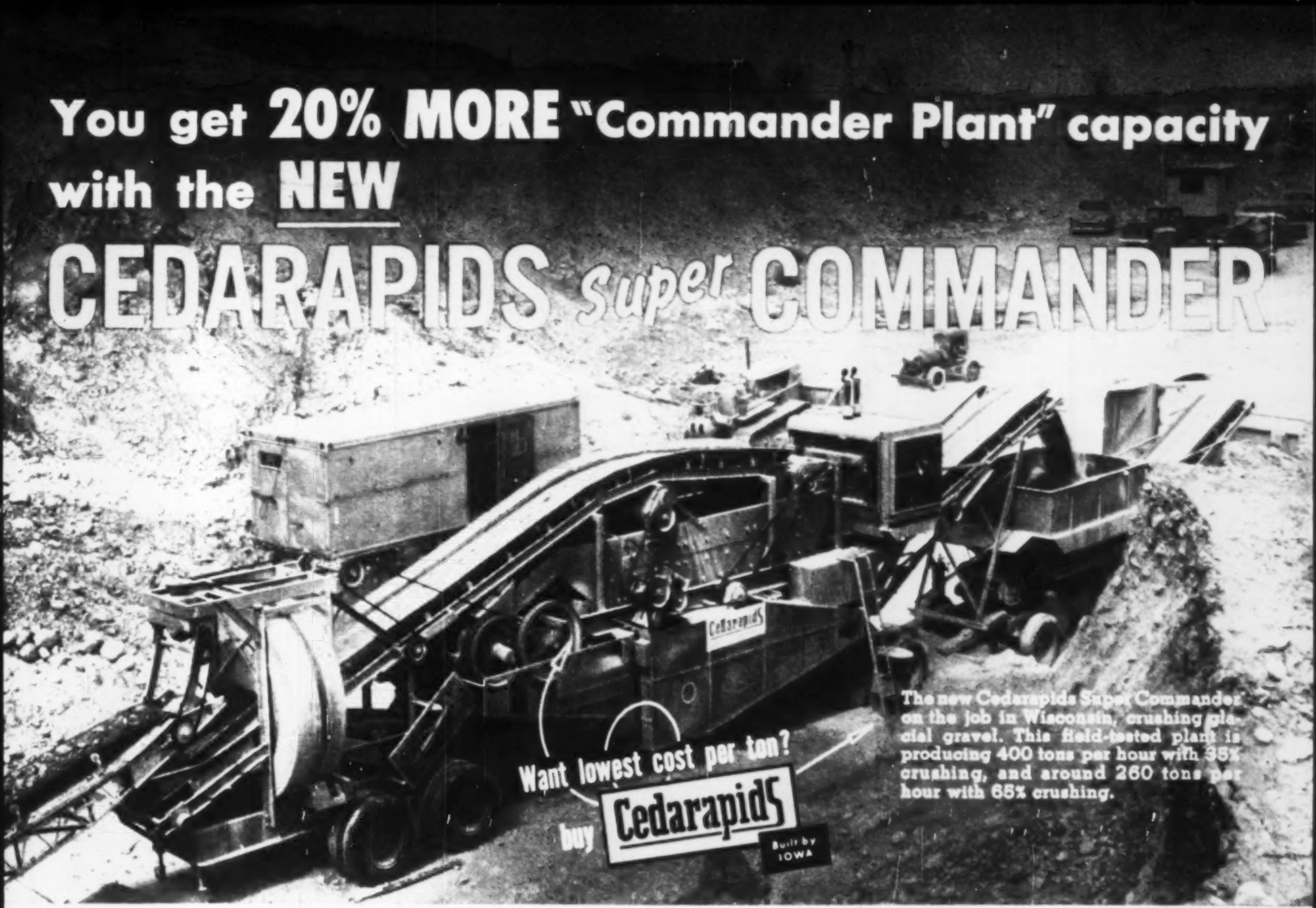
For example, had New York State school costs followed the trend since 1949 in ENR's New York City Building Cost Index, the median second quarter contract price would have been about $22.60 instead of $17-$17.68. And if they had risen since 1949 as much as the building contractor price index average, the second quarter median cost would have been about $20.20 per sq ft.

School Costs Per Square Foot in New York State

State Education Department, Division of School Buildings and Grounds

	No. of Schools K-6 Total	Elementary, K-6 — Dollars per sq ft for schools with . . . One Large Unit* Min	One Large Unit* Med	One Large Unit* Max	Two Large Units* Min	Two Large Units* Med	Two Large Units* Max	Three Large Units* Min	Three Large Units* Med	Three Large Units* Max	No. of Schools 7-12 Total	Secondary, 7-12 Dollars per sq ft Min	Med	Max
1949	29	$10.40	$14.00	$19.20	$12.00	$14.60	$18.70			..	4	$13.20	$13.55	$16.20
1955	52	11.75	16.40	23.60	11.90	15.70	20.25	$11.90	$14.90	$15.90	13	12.55	17.10	18.50
1956	53	12.90	17.85	23.80	13.25	17.65	21.10	16.50	16.80	17.10	7	15.40	18.15	20.90
1957	50	14.65	19.28	25.20	12.90	18.10	21.75	.....	18.70	.....	10	16.40	18.61	20.60
1958	32	13.85	18.95	22.30	13.50	17.30	20.30	.....	.....	.....	8	15.90	16.55	19.70
'57, Q1	11	17.80	18.58	19.35	15.70	19.23	21.75	.....	18.70	.....	1	..	18.51	.
Q2	14	14.65	19.60	25.20	12.90	18.10	19.00	.....	.....	.....	5	18.70	19.35	20.00
Q3	11	18.60	19.15	19.40	14.40	17.78	18.40	.....	.....	.....	3	16.40	19.50	20.90
Q4	14	16.95	20.80	25.20	17.60	19.00	19.60	.....	.....	.....	1	.....	18.90	
'58, Q1	7	18.20	18.30	18.45	16.60	17.48	19.45	.....	.....	.....	2	16.60	17.30	18.00
Q2	9	16.65	18.55	20.30	16.30	17.80	19.35	.....	.....	.....	4	16.00	17.13	19.70
Q3	6	16.95	19.65	22.30	16.65	19.85	20.30	.....	.....	.....	..	...		
Q4	10	13.85	20.13	21.00	13.50	16.38	18.50	.....	.....	.....	2	15.90	16.20	16.50
'59, Q1	1	.....	.....	.....	.....	18.50	.....	.....	.....	.....	..	.....	.....	..
Q2	6	16.20	17.68	19.00	15.20	17.00	18.80	.....	.....	.....	..	.....	.....	

* Large Unit includes a general purpose room, gymnasium, auditorium, multi-purpose or other group activity room.
These are costs based on the four contracts general construction, plumbing, electrical, heating and ventilating. They include built-in features, but no movable furniture or equipment. Some minor site improvement may be included, but no major site work and no land costs.



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The Super's combination of BIG-capacity components meets every demand for tremendous output... 400 to 500 tons per hour, or more, in 1 to 4 product sizes. Its Twin Jaw Crusher gives you 40% to 100% more primary crushing, a greatly reduced circulating load, and 5 to 10 times longer jaw life than you get with a comparable-sized single jaw crusher. The big 48″ x 14′ horizontal vibrating screen, with three full decks, provides 40% more screening area than the standard Commander's 2½-deck screen. The elevating wheel is 12″ larger in diameter and 5″ wider. Conveyors and feeder are 36″ wide.

And there's no sacrifice of portability in the every-way-bigger Super Commander. A new air-suspension third axle (optional) distributes weight and reduces axle load to under 18,000·lbs. to meet most State requirements. Maximum travel height is only 14′. The permanently mounted front delivery conveyor and permanently positioned screen assure fast set-up time.

There are many additional benefits.... a 48″ x 10′ Pre-Screening Attachment (optional) for producing 100% crushed products ... large 12″ dia. x 4′6″ long sand ejector screw (optional) ... simplified drives ... new belt wipers ... and many other design refinements.

This is the plant you need for *super* production with no increase in operating personnel or maintenance costs. And remember ... the lower-priced standard Commander is still a high profit-maker when your volume requirements are under 400 tons per hour. See your Cedarapids dealer for full facts about both plants.

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Gentlemen: Please send complete details about the new
Super Commander Plant.

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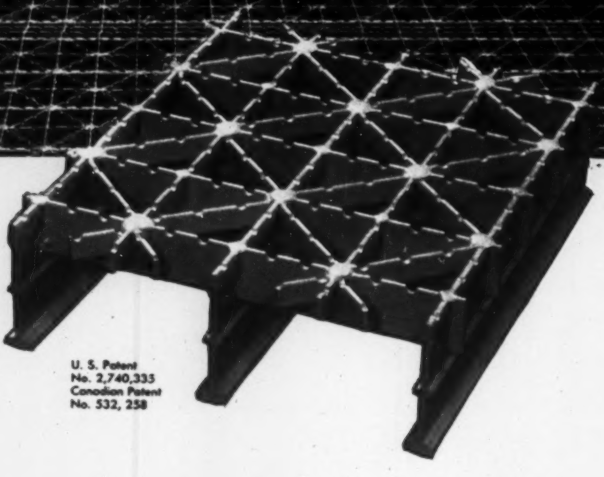
Company____________________________________

Address_____________________________________

City________________________State_______________

Lake Sabine Swing Bridge . . . *Floored with Strong, Rigid and True* GREULICH 4 WAY



U. S. Patent
No. 2,740,333
Canadian Patent
No. 532, 258

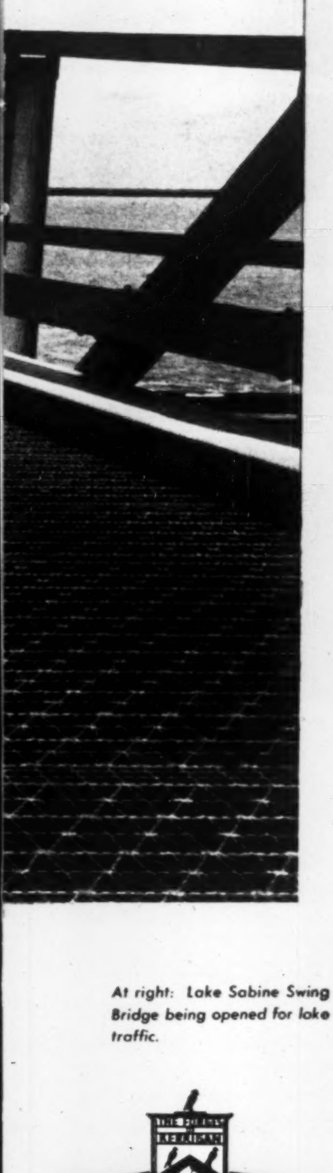
HERE YOU SEE another Greulich 4-Way Grid installation on Lake Sabine swing bridge. This bridge and causeway connects Jefferson County, Texas with Cameron Parish, La. and was completed last year.

Due to Greulich 4-Way Grid's stronger design and precision manufacture, it has been approved and installed in more than twenty states in only four years time. The grid's integrally connected triangles, with bars running in four directions, insure a stronger, more rigid floor. The Greulich design also provides economy in field erection—with no loss of strength. Bearing members are spaced 7½" apart instead of the usual 6 inches (cutting number of field welds by 20%); and units are fabricated in panels 7 feet, 3 inches wide—a size which cuts handling costs to a minimum but still permits hauling on ordinary flat bed trucks. Panels can be fabricated in lengths up to 44 feet. Where a closed surface is desired the grid can be filled half depth with concrete.

Deep throat, V-butt welds, contacting all surfaces, insure trouble-free long lasting performance against hard surface wear and abrasion.

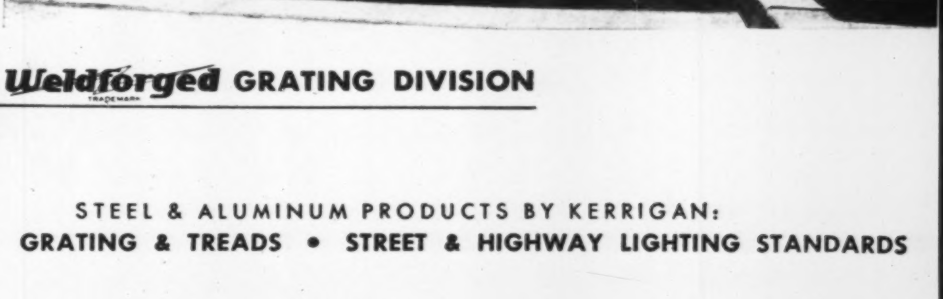
For catalog and further information, write Division E-9, Kerrigan Iron Works Company, Nashville, Tenn.

GRID



Air view of Lake Sabine Bridge and Causeway
Engineers: J. B. Converse, Inc., Mobile & M. D. Gates, Port Arthur, Texas
Contractor: Louisiana Paving Co., Kenner, La.

At right: Lake Sabine Swing Bridge being opened for lake traffic.



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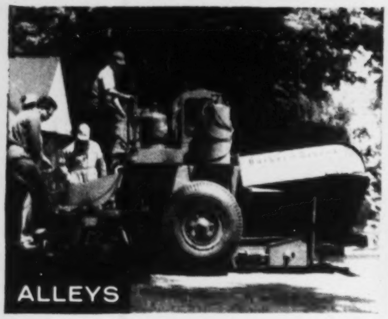
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CIRCLE 90 READER SERVICE CARD

Heavy Construction Cost & Price Indexes

Competition Forces Bids Down

Heavy construction contractors are nailing down new jobs by hammering bids thin. Highway bid prices on federal-aid projects let in the second quarter dropped to the lowest level since early 1956. Bid prices on heavy construction in the western states declined 3.2% in the first half. And the rebound in irrigation-hydro construction costs, which began in late 1958, ran out of gas this summer.

Reason: Contractors' capacity has outstripped the growth in volume of new work. And record investment in new machines has sent productivity spiraling upward on large construction jobs, allowing contractors to absorb materials, labor and equipment price increases—and at the same time trim their bids without eliminating reasonable profits on new projects.

The Composite Mile Price Index for federal-aid projects shows contractors trimming unit prices on major bid items by 2.7% in the second quarter. The U. S. Bureau of Public Roads' index is now 3.2% below a year ago, and it's 4.4% under the all-time high set in the last quarter of 1957. Unit prices for excavation are the lowest since 1955, while surfacing prices have held steady since mid-'56.

The most dramatic drop, however, is in the structures sub-index. This is the lowest since mid-'55, and has dropped 11% since the first quarter of '57, when it hit a record high.

These declines are due to the economies possible when contractors have large projects. On smaller jobs, of course, the opportunities to economize are more limited and the costs will naturally be higher.

In fact, bid prices in California rose sharply in the second quarter largely because of the cutback in Interstate highway awards. Projects under $1 million made up a much higher percentage of contracts let by California's Division of Highways in the second quarter than in the first quarter. And there was a heavier sprinkling of resurfacing jobs. Result: California's highway bid price index soared 25.1% above the first quarter.

This situation has its application in the over-all outlook for highway costs. The Interstate program is being cut back this year, and next year and possibly during the first half of 1961. This could foster a new uptrend in bid prices because there will be fewer large projects, less opportunity for contractors to cut bids by offsetting increases in basic costs with greater on-the-job efficiencies. Lower bids could, in fact, be a quick way to bankruptcy.

Composite Mile Highway Price Index

US Bureau of Public Roads Indexes, 1925-29=100

	Excavation ¹ 17,491 cy*		Surfacing ² 3,726 sy*		Structures					
Year	Bid price	Sub-index	Bid price	Sub-index	Reinf. steel 16,000* lb. Bid price	Struct. steel 4,325* lb. Bid price	Struct. concr. 68* cy Bid price	Comb. Sub-index	Composite Mile Index	ENR 20-Cities Construction Cost Index
'25-'29=100	$0.35†	100.0	$2.22†	100.0	$0.052†	$0.067†	$22.15†	100.0	100.0	100.0
1926	0.36	103.7	2.29	103.1	0.053	0.074	22.76	103.7	103.4	100.5
1939	0.21	59.8	1.73	77.8	0.044	0.059	19.13	85.9	72.6	113.8
1946	0.35	99.1	2.65	119.3	0.075	0.113	38.79	164.7	119.0	167.2
1949	0.38	107.4	3.40	153.1	0.104	0.146	47.36	210.3	145.8	230.5
1955	0.36	101.9	3.67	165.3	0.116	0.165	51.99	232.8	152.8	318.8
1956	0.38	108.2	3.89	175.5	0.131	0.202	54.33	253.8	163.3	334.6
1957	0.40	113.5	4.02	181.2	0.137	0.218	56.92	267.0	170.0	349.8
1958 Avg	**0.39**	**112.5**	**4.02**	**181.1**	**0.130**	**0.193**	**54.92**	**253.3**	**167.5**	**366.8**
Q1	0.39	110.3	4.02	181.3	0.131	0.201	54.99	255.6	167.1	359.7‡
Q2	0.40	114.5	4.03	181.7	0.130	0.192	54.85	252.9	168.5	365.9‡
Q3	0.39	111.4	3.97	179.0	0.130	0.186	54.55	251.1	165.7	373.8‡
Q4	0.40	113.7	4.04	182.2	0.129	0.191	55.28	253.7	168.5	373.9‡
1959:										
Q1	0.40	113.4	4.02	181.3	0.128	0.187	54.93	251.2	167.6	377.6‡
Q2	0.37	104.8	4.03	181.7	0.125	0.182	51.90	240.7	163.1	384.2‡

¹ Common excav. plus other expressed as equivalent common ² Portland-cmt. concr. plus other expressed as equivalent portland-cmt. concr. * Fixed quantities used for establishing price trend † Prices used for base year index ‡ Last month of quarter. Sep. '59 (Q3 '59): 392.3

Irrigation and Hydro Cost Indexes

US Bu Reclamation, Denver office 1949-51=1.0

	July						1958			1959		
Class of Construction	1940	1946	1949	1955	1956	1957	Apr.	Jul.	Oct.	Jan.	Apr.	Jul.
Composite index	**0.47**	**0.78**	**1.04**	**1.11**	**1.19**	**1.29**	**1.26**	**1.24**	**1.26**	**1.28**	**1.27**	**1.27**
Dams, earth	0.51	0.85	1.08	1.05	1.13	1.22	1.17	1.10	1.10	1.12	1.12	1.12
Dams, concrete	0.47	0.76	1.02	1.02	1.09	1.15	1.14	1.12	1.12	1.13	1.13	1.13
Pumping plants, bldg & equip	0.48	0.73	1.00	1.26	1.37	1.46	1.41	1.42	1.46	1.47	1.47	1.48
struct, reinf conc, & improv	0.44	0.70	1.00	1.22	1.28	1.34	1.30	1.32	1.33	1.33	1.33	1.33
equipment	0.55	0.78	0.97	1.30	1.45	1.58	1.59	1.60	1.63	1.65	1.66	1.67
pumps & prime equip			0.97	1.35	1.54	1.66	1.67	1.68	1.71	1.73	1.75	1.76
access elec & misc equip			0.97	1.20	1.30	1.44	1.44	1.45	1.49	1.50	1.50	1.51
steel penstocks, disch. pipes		0.69	0.96	1.36	1.53	1.72	1.66	1.63	1.69	1.72	1.74	1.75
Canals	0.47	0.78	1.07	1.05	1.13	1.21	1.12	1.13	1.13	1.13	1.12	1.12
Conduits, tunnels, free flow, conc lined		0.71	1.02	1.16	1.23	1.29	1.25	1.28	1.29	1.29	1.28	1.28
Laterals and drains	0.41	0.74	1.02	1.18	1.20	1.32	1.26	1.27	1.30	1.32	1.30	1.30
Primary roads	0.48	0.82	1.06	1.12	1.16	1.25	1.22	1.21	1.23	1.24	1.25	1.25
Secondary roads, unsurf	0.50	0.91	1.08	1.04	1.08	1.21	1.18	1.18	1.19	1.19	1.20	1.20
Bridges, steel	0.46	0.78	1.03	1.32	1.40	1.52	1.46	1.44	1.47	1.48	1.48	1.48
Power plants, hydro, bldg & equip	0.51	0.77	0.99	1.26	1.37	1.47	1.42	1.44	1.49	1.51	1.51	1.52
structs, reinf conc, imprv	0.45	0.71	1.01	1.22	1.28	1.33	1.30	1.33	1.34	1.34	1.34	1.34
equipment	0.55	0.80	0.93	1.28	1.44	1.55	1.55	1.58	1.60	1.61	1.62	1.63
turbines & generators	0.56	0.83	0.94	1.31	1.46	1.58	1.56	1.60	1.62	1.64	1.66	1.67
access elec equip	0.54	0.72	0.98	1.24	1.34	1.48	1.48	1.49	1.52	1.52	1.52	1.53
misc equip	0.51	0.73	0.98	1.23	1.34	1.44	1.40	1.40	1.44	1.44	1.45	1.46
Concrete pipe lines	0.55		..		1.21	1.28	1.28	1.32	1.32	1.33	1.35	1.36
Transm switchyards & substa	0.54	0.70	0.94	1.38	1.47	1.60	1.58	1.56	1.60	1.61	1.62	1.63
Transm lines, wood pole 115kv	0.52	0.99	1.16	1.02	1.09	1.10	1.18	1.21	1.23	1.23	1.21	1.23
Transm lines, steel tower 230kv	....		.	1.22	1.33	1.43	1.42	1.40	1.43	1.44	1.44	1.45
Permanent genl property, bldgs	0.44	0.66	0.93	1.20	1.29	1.31	1.30	1.32	1.34	1.35	1.36	1.38

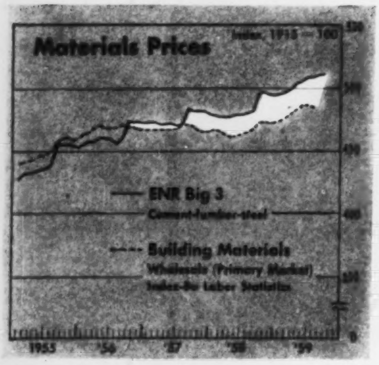
Based on combined costs of material and labor furnished by the contractor, and material and labor furnished by the government on US Bureau of Reclamation projects in 17 western states and Alaska

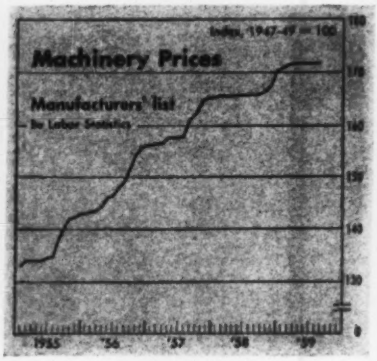
Western States Unit Price Index

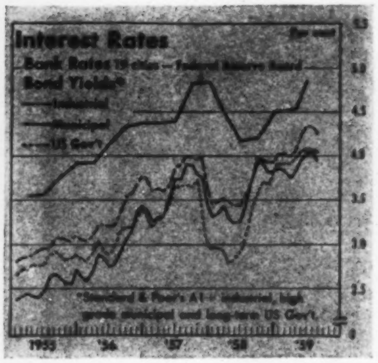
Estimates Section, San Francisco District, Corps of Engineers, 1st Half 1946=100

		1946	1949	1952	1953	1954	1955	1956	1957		1958		1959
		1st half	1st half	1st half	1st half	1st half	1st half	1st half	1st half	2nd half	1st half	2nd half	1st half
Index. 1st Half '46=100		**100.0**	**132.2**	**144.76**	**145.35**	**145.09**	**141.37**	**154.74**	**170.37**	**178.68**	**163.07**	**182.02**	**176.18**
Items used in index	Unit	Based on these average unit prices											
Cr rock base course	ton	2.81	2.29	2.60	2.80	2.96	3.03	3.48	3.41	3.49	3.65	2.69	3.35
Plant mix aggregate	ton	4.82	4.43	5.51	5.99	5.84	5.86	6.19	6.92	6.26	7.28	6.83	6.97
Plant mix asphalt	ton	22.00	26.85	24.34	24.00	21.46	25.00	21.74	21.50	24.00	25.19	23.00	21.00
Cover aggregate	ton	5.09	5.65	4.06	6.37	6.42	6.63	6.60	7.13	6.71	7.02	6.96	6.84
Structural concrete	cy	50.65	65.07	75.81	71.00	67.71	67.00	72.00	82.00	82.00	79.00	81.00	82.00
Pavement concrete	cy	13.20	19.69	18.97	19.00	19.09	22.00	24.00	23.00	26.00	20.00	28.00	22.00
Reinforcing steel	cwt	9.60	12.70	14.30	13.70	14.00	13.00	13.00	17.00	18.00	17.90	18.00	16.00
Cement	bbl	2.84	4.98	4.63	4.83	4.63	4.68	5.04	5.11	5.12	5.00	5.18	4.83
CM pipe 12"	lf	2.20	3.03	3.65	3.61	3.70	3.60	3.98	4.48	4.57	4.33	4.52	4.30
CM pipe 24"	lf	4.05	5.26	6.16	6.46	6.33	6.84	6.60	8.04	7.60	7.56	7.87	7.97
RC pipe 18"	lf	3.50	4.27	5.50	6.25	5.10	5.15	5.91	6.24	6.46	6.38	6.58	6.71
RC pipe 36"	lf	8.29	10.47	14.33	13.94	11.24	11.62	11.86	13.75	13.13	12.72	13.20	14.52
VC pipe 6"	lf	1.87	2.39	2.94	3.01	2.80	2.75	3.50	3.70	3.37	3.31	3.90	3.67
VC pipe 8"	lf	2.22	2.80	3.77	3.53	3.40	3.36	3.99	3.67	3.99	4.01	4.65	4.65
Sewer manhole	1/10 ea	16.50	20.80	22.82	25.34	23.67	23.70	24.90	28.20	27.70	27.40	30.00	29.40
Roadway excavation	cy	0.67	0.96	0.92	1.07	0.87	0.80	0.92	1.05	1.04	1.09	1.15	2.11
Structural excavation	cy	2.49	4.27	3.42	3.57	3.72	3.78	3.63	5.42	3.66	3.78	4.25	4.16
Watering	M gal	2.13	2.13	1.97	2.14	1.74	1.71	1.76	1.92	2.00	1.86	1.86	1.86
Flat wheel roller	R-hr	5.47	7.82	7.26	8.00	9.86	8.50	8.15	10.06	11.72	11.31	11.00	11.00
Piling, green wood, fur	lf	0.64	0.65	1.68	1.01	1.48	1.17	1.35	0.895	0.84	1.09	0.88	1.00
Piling, treated, fur	lf	1.25	1.45	2.03	1.77	1.64	1.84	2.00	2.75	4.13	1.77	2.07	2.16
Timber in place	100 fbm	16.60	26.33	30.90	30.80	42.20	32.10	45.20	50.50	58.10	39.30	58.30	59.80
2" Galv steel pipe	lf	1.04	1.38	1.51	1.68	1.62	1.65	1.60	1.62	2.23	1.67	1.66	1.40
Cast-iron pipe 6"	lf	2.86	4.17	4.42	4.15	4.15	4.36	4.54	5.42	5.32	5.40	6.29	5.05
Cast-iron pipe 8"	lf	3.80	6.47	6.29	5.66	5.04	4.80	5.23	6.07	6.79	6.27	7.55	6.03
Gate valve 6"	1/10 ea	7.06	9.70	10.55	11.30	10.30	8.85	12.50	10.08	11.80	11.50	12.10	12.40
Total in dollars		**193.65**	**256.01**	**280.34**	**281.48**	**280.97**	**273.78**	**299.67**	**329.93**	**346.03**	**315.79**	**352.49**	**341.18**

Basic Cost Factors







Outlook: Materials, Machinery, Money

Construction materials prices will hold steady, on an over-all basis, during the balance of 1959. Significant changes are expected in key items, steel and lumber, but a probable rise in structural steel prices at the mill would be offset by declines anticipated in lumber prices.

• **Steel: Up**—The big question mark in the outlook for materials cost, and for construction costs over-all, is what will happen to steel prices in the next few weeks. At ENR press time, there was no sign of a break in the strike stalemate.

Whether steel prices will increase hinges mainly on whether the United Steelworkers Union will agree to the steel companies' demand that the companies be allowed to make changes in local plant working rules to end wasteful labor practices, thus boosting productivity. The steel manufacturers argue that such cost savings are a prerequisite to their absorbing any wage increase granted the steelworkers. Otherwise, the mills would have to deny a wage hike—or pass along any increase in labor costs by raising prices for construction and other steel.

But it is largely on the point of work rule changes that the union so far refuses to yield. Thus hope dims, for no increase in structural steel.

The outcome of this longest postwar steel strike will probably be higher prices at the mill for heavy structural shapes and plate. And prices of standard structurals may also rise, despite some industry talk that competition from lower-priced imported structurals could bring a price cut by year's end.

For each $1-per-ton increase in the mill price of standard structurals, ENR's Construction Cost and Building Cost Indexes would be pushed up by 1.25 points. ENR estimates that a rise of $4 per ton, for an increase of five points in the ENR Cost Indexes, will follow agreement on a new labor contract in steel.

Much greater competitive pressure from reinforcing bar imports, compared to standard structurals, makes for heavier odds in favor of no change in re-bar prices (not included in the ENR Cost Indexes). In fact, the recent industry talk that bar prices might be cut by the end of '59 could come true.

• **Lumber: Down**—The crack in plywood prices and the current softening in lumber prices are reactions to a slowdown in home starts as mortgage credit terms tighten, interest rates rise and discounts increase on government-insured mortgages.

This situation is expected to continue through 1960. However, the slide in housing contracts will probably not be as severe as the 1956-57 slump. So a slower decline is forecast for lumber prices during the next 15 months. In '56-'57, fir 2x4 prices tumbled $12 per Mfbm, according to ENR's U.S. average of fob city prices. Pine 2x4's dropped $5-$6 per Mfbm. During the next 15 months, the lumber price slide should be held to only about one-half or less of the drop experienced during 1956-57.

• **Machinery: Up**—Construction equipment list prices have been steady for most items during all of '59, following widespread increases late in '58. But this stability may not last more than a month or two longer.

A steel price increase could be all that's needed to trigger another wave of price hikes during the fourth quarter. Wages in the construction equipment manufacturing industry have been rising, as usual, this year.

The combination of higher steel and labor costs would be expected to drive manufacturers' prices upward. But there is one joker in the deck: Contractors' new business is not rising as fast now as it was during the 1958 recovery and early '59 expansion of the heavy construction market.

Moreover, a slowdown in highway contracting is well under way now and this will hurt equipment sales because of the large investment by contractors in equipment per dollar of highway construction work handled.

• **Money: Up**—The cost of borrowing for working capital and equipment loans has been rising this year. On top of a swift rise in the spring, banks have upped interest rates again. The prime rate, charged banks' most solid customers, jumped ½% at most banks early this month. This means that contractors' costs of doing business will increase. And, as the supply of loanable bank funds is strained by rising demand, contractors may be required to leave larger portions of their loans on deposit, thus adding to the increase in effective interest rates.

The cost of borrowing long-term money to finance new construction took a temporary dip during July and the first two or three weeks of August. But the "breather" didn't last. Interest rates have been prodded higher in recent weeks by rising demand by industry and government. Though the U.S. Treasury is forced to stay away from the long-term capital market because Congress is refusing to up the interest ceiling on long-term Treasury bonds, the impact of heavy borrowing in the short-term market is spilling over into the long-term market. There, it's forcing industry, state and local governments and home buyers to pay more for their construction capital.

Further increases in the price of both short-term bank loans and long-term capital are probable this year.

CIRCLE 93 READER SERVICE CARD→

THE WALL STREET JOURNAL

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Whoosh!

The 2,000-mph Airliner Edges Closer to Reality

7 Firms Push Plans

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To put less money in the ground and more above in building design

Florida Church Builds On Sand—Despite The Gospel Warning

• • •

Proponents Say Vibroflotation Process of Packing Sand Cuts Need for Pile-Drivers

By Robert Ramaker

Staff Reporter of The Wall Street Journal

HIALEAH, Fla.—The First Methodist Church here has just built on sand—Gospel warning to the contrary.

But the Rev. Maurice Felton expects his spanking new, Spanish-mission-style church to endure the ages. The firm-jawed pastor is standing four-square on "Vibroflotation," a method that squeezes foundation sand together so tightly and permanently, its backers claim, that costly pile driving can be forgotten.

By using Vibroflotation the churchgoers here have trimmed foundation costs by $15,000—a tidy 7% of the total cost of $212,000, says Miami architect Dean Parmelee, who designed the church.

Others Turn to Process

Lured by such saving, others are turning to the new process. Schools, warehouses, airport hangars, silos, university buildings and highways are being built in more than a dozen states on sand compacted by Vibroflotation.

Rust Engineering Co., of Pittsburgh, which holds the patent on the process, says that its subsidiary, Vibroflotation Foundation Co., has handled a total of 60 projects thus far, most of them in the last two to three years.

To see how the process works, pour water into a pail of sand until the sand is saturated. Tap the side of the pail and the sand settles down. Much the same thing happens to a beach exposed to prolonged pounding by the ocean. The thoroughly-soaked sand attains speedway hardness.

While there is nothing particularly new about packing down sand, other methods pack from the surface. But Vibroflotation does its shaking and soaking beneath the surface—as deep as 62 feet. And Vibroflotation's proponents say that once compacted the sand stays packed, even after it dries.

To see the process in action, visit Florida's Pompano Beach, some 40 miles north of Miami. Here, rising above the scrub-strewn sand, you see a 50-foot crane from which is suspended the long, slender Vibroflot. Hanging tail-up, the Vibroflot—four stories high and only 15 inches in diameter—looks like an inverted missile. It's at work on a 340-foot by 146-foot site for Boward County's $1.6 million North District Hospital.

Settling the Sand

The needle-shaped compacter, armed with a water-squirting nose, plunges under its own three-ton weight into the soft sand, shaking its way 35 feet down. As the compacter shakes, the wettened sand settles. Slowly it's lifted up, and workers pour sand into the depression created by this big squeeze. The area squeezed tight is about two strides across. Again and again the compacter goes up and down—711 times to cover the area that needs settling in this case.

Using it, the district has cut construction costs by $28,000 and achieved what the architect, William G. Crawford of Fort Lauderdale, believes is a comfortable safety factor under the four-story concrete block and stucco building.

Meanwhile, dozens of brawny workmen eight to ten feet down already are excavating for the foundation. They dig vertical sides yet hardly a grain of sand trickles in on them. A few yards away, sand is soft enough for a playbox.

Taxpayers are getting a break from the cost-cutting propensities of this earth-burrowing "missile," its proponents claim. William Flynn, manager of the Pittsburgh company's subsidiary, said that piling at the recently completed University of South Florida would have run $1 million. "With Vibroflots the cost came to $115,000," he says.

Building a Mill

Industry also is being attracted by the savings which Vibroflotation offers. Rayonier, Inc., for instance, used it in building its wood cellulose mill at Jessup, Ga., and across the continent at Attalia, Wash., Boise Cascade Corp. used it to prepare the foundation for its paper mill.

Given the right soil conditions, Mr. Flynn claims foundation costs can be reduced 50% on $15,000 to $25,000 jobs by Vibroflotation, and by more on larger ones. A factor in any saving is how deep the foundations have to be; if less than eight feet, pile-driving companies can do the job about as cheaply, he says.

While the Rust subsidiary has been working on the process for six years now, the early going was difficult. Mr. Flynn confesses that Vibroflotation Foundation Co. lost money its first three years. And the company's Florida representative, lean-faced, mustachioed Vincent Batz, recalls he thumped for Vibroflotation for three years before he landed a customer. Recently, however, the process has begun to win acceptance. "Last year we grossed about $500,000 and this year we've already got orders on the books totaling $750,000," says Mr. Flynn.

Besides shaving costs, Vibroflots are quiet, says another company official. He cites how the gentle swooshing of the Vibroflots in Palm Beach kept peace with the town's winter-season, anti-noise ordinance. Result: Foundation work for the four-story Park Place apartment unit was completed on schedule.

At Hampton Roads Crossing, a man-made island in Virginia, Vibroflots were used to compact the soil for the highway crossing it.

Thus far, Vibroflotation has had its greatest acceptance in the Deep South where in many cities most of the naturally-solid foundations sites are occupied, and businessmen and civic planners have to cope with building on sand. But Mr. Flynn is optimistic about developing business in other sections of the country.

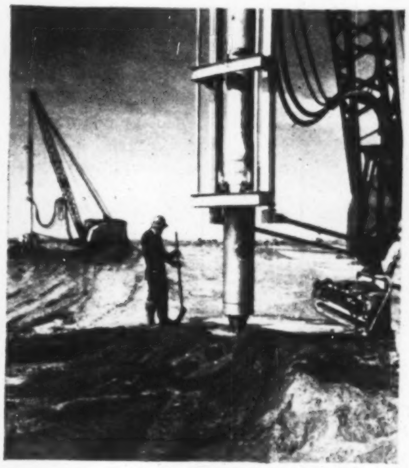
Other builders have conflicting views about the Vibroflotation process. Says James T. Monahan, executive vice president of the Auchter Co., big heavy construction concern, of Jacksonville, Fla.: "It seems to work fine. For compacting soil it does an excellent job." But a representative of Raymond Concrete Pile Co. in Miami, says rather sourly, "Sure it works in special cases. But like any other tool it has its limitations."

So far, the process has proved too expensive to use on individual home sites.

Leafing through the company's record of successful jobs, a representative concedes to one goof. In 1956, the Vibroflots compacted a Port Everglades, Fla., site to stand up under six heavy industrial silos. The silos were built on top of 27 feet of compacted soil. But scarcely was the first silo loaded with cement when it tilted. Experts from Rust Engineering were hustled down from Pittsburgh. The cement was piled in a little differently and the silos have kept an even keel ever since, the company says.

While the company seems adept at saving others money, it admits to having problems with its own costs. "The process is great," beams a regional representative, "but moving a Vibroflot from one site to another is expensive. Even so, we're cutting down on this in-and-out cost. Using other people's electricity was a big item. Now we operate with our own generators."

Please Turn to Page 17, Column 1



The soil compaction job for the Boise-Cascade Corp. plant site proceeded at a rate of 4,000 cubic feet of soil compacted per hour with two Vibroflot machines. Each compaction consumed 3 or 4 tons of sand. Savings were about $35,000.

VIBROFLOTATION FOUNDATION CO.

930 FORT DUQUESNE BLVD. • PITTSBURGH 22, PA.

Write for Booklet E-22

Materials Prices

Market Quotations by ENR Field Reporters

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25	......	$110.50	$130.00	$6.975	$9.75	$6.60	......
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.60	......
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	$14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	......	......	5.675	12.25	6.50	......	......	......	......	......	14.75
Youngstown Area	......	......	5.675	......	......	......	......	......	9.75	......	......
Geneva	5.50	5.30	......	......	......	......	......	......	......	......	......
Los Angeles	6.20	......	6.375	......	6.50	......	......	......	9.75	6.875	......
Pueblo	......	......	......	......	......	......	......	$9.75	9.75	6.60	......

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras, New York:	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	REINFORCING BARS Extras, New York:	EXPANDED METAL LATHb Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	EXPANDED METAL LATHb Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	$9.40	Quantity extras, per cwt: under 100#, +$10; 100–399#, +$7; 400–999#, +4.00; 1000–1999#, +1.25; 2000–4999#, base price; 5000–9999#, −25¢; 10,000–19,999#, −50¢; 20,000–29,999#, −75¢; 30,000# and up, −1.25	8.75	$8.75	EXTRAS, per cwt—♦Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000–1999#, +$1.50; 2000–4999#, +$1.20; 5000–9999#, +90¢; 10,000–19,999#, +60¢; 20,000–29,999#, +30¢; 30,000–39,999#, +10¢; 40,000# & up, none. ♦Size†: #2 +$2.50; #3 +$1.40; #4 +$1.00; #5 +70¢; #6, #7, #8, #9, #10, #11 +50¢. ♦Bending: heavy, +90¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). ♦Engineering (details and placing from designs by others): over 500 tons, +45¢; 200–499 tons, +50¢ but not over $4500; 75–199 tons, +65¢ but not over $2000; 20–74 tons, +75¢ but not over $975; 5–19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +60¢.	$53.00S	$57.00S	4 × 18 in., No. 5 & 10 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. ...... $7.04 4 × 12 in., No. 8 & 12 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. ...... $2.62 6 × 8 in., No. 6 & 6 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. $4.17
Baltimore	9.70		9.00T	....		44.50	49.00	
Birmingham	9.00ty		8.99ty	8.99ty		61.00pK	67.00pK	
Boston	9.12K		8.75t	8.75t		49.50K	54.00K	
Chicago	9.15s		7.16gu	7.16gu		52.00‡U	63.00‡U	
Cincinnati	9.56skt		9.04t‡	....		44.50Kg	49.00mnKg	
Cleveland	8.20st		7.14ct	....		46.50KL	51.00KL	
Dallas	10.40M		9.00	9.00		44.00u	48.50w	
Denver	10.16cK		9.25c	....		63.00n	69.00n	
Detroit	9.56a/9.06M		7.15Q	11.85Q		55.00O	63.00O	
Kansas City	9.82sT		8.10N	....		49.00	60.00	
Los Angeles #	8.90dkt		7.35frt	....		55.00S	64.00S	
Minneapolis	....		9.26T	9.26T		44.50K	49.00K	
Montreal	7.90–8.60iCF/8.20–8.90AiF		7.00/7.50FGi	7.00/7.50FGi		65.70h	70.20h	
New Orleans	....		8.00gktz	....		48.50K	53.50K	
New York	9.84‡s		8.60ty	8.60y		52.00n	59.00ne	
Philadelphia	9.20bu		8.23u	....		41.50‡U	55.20‡U	
Pittsburgh	9.00y		7.35y	....		49.50‡rw	54.00‡rw	
St. Louis	9.48stz		7.75‡txQ	7.75‡txQ		61.00wzK	62.00wzK	
San Francisco	9.90aS		9.85jS	....		52.00S	56.00S	
Seattle	10.20aD		8.85DM	....		67.00‡nD	73.50‡nD	
Toronto	9.20H		7.85	7.85		48.10gqI	55.10gqJ	

•‡ Delivered •* Aver. of Canadian & American •# add 4% sales tax •a 2000–4999# •b 10,000–19,999#, fob city •c 20 tons or over •d 10,000–29,999 •e Intermediate struct'l •f Incl. delivery in free zone •g CL •h list price; dominion tax exempt; add provincial and municipal taxes •i add provincial and municipal sales taxes •j intermediate and hard grade •k fob city •l delivered: contractor to do unloading •m copper alloy •n LCL •o asphalt coated •p 500 sq. yd. or more. •q 2.5 lb •r less 2% disc. for cash •s 2,000–4,999# •t less ½% disc. 10 days •u add 10¢ switch •v incl 15¢ del. •w truck lots. •x add 2% sales tax •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D ½% for cash. •E 30,000# or over. •F Federal tax exempt for bldgs. •G add 10¢ del. •H 8.85 without tariff charges. •I 3 lb $60.00. •J 4 lb $47.50. •K less 2% disc. 10 days •L F.o.b. Youngstown plant •M 5,000–9,999# •N 2,000–19,999# •O 100 sy lots •Q 5 tons to CL •R: revised •S less 2% disc. 10th •T less ½% disc, 10th of mo. •U less 2% disc 10 days

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEXa	ASBESTOS CEMENT PIPE Z per lin. ft. 6" Press Cl. 150	ASBESTOS CEMENT PIPE Z 12" Sew Cl. 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTMC 13-55 8 in.	CLAY SEWER PIPE ASTMC 13-55 12 in.	CLAY SEWER PIPE ASTMC 200-55T 24 in.	CLAY SEWER PIPE ASTMC 200-55T 36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTMC 4-55 6 in.	CLAY DRAIN TILE† 8 in.	CONCRETE SEWER PIPE§ Per ft., delivered ASTMC 14-55 12 in.	CONCRETE SEWER PIPE§ 24 in.
Atlanta	130.5	$1.61/1.69	$2.36/2.48	$0.55r	$1.05r	$4.05r	$12.50r	$209.00sr	$334.00r	$0.92mKr	$3.68mKr
Baltimore	140.1	1.61/1.69	2.19/2.30	.665	1.20	5.05	12.71	187.80	289.20	1.01	2.75
Birmingham	125.8	1.61/1.69	2.26/2.37	.50r	.95r	4.14rw	11.00rw	296.00rx	433.00rx	1.25rS	2.75rS
Boston	143.1	1.63/1.71	2.19/2.30	.784qrtL	1.512qrtL	6.255qrtM		215.40r	330.60r	1.56S	3.47S
Chicago	140.9	1.61/1.69	2.19/2.30	.93rm	1.78rm	7.52rm	21.16rm	220.00Br	330.00Br	1.30	4.00
Cincinnati	135.5	1.63/1.71	2.19/2.30	.616rt	1.188rt	4.725rt	12.40r	270.00r	400.00r	.85rAB	3.25rAB
Cleveland	141.7	1.63/1.71	2.19/2.30	.69BCN	1.32tBC	5.13tBC	13.33tBC	155.40mBC	240.60mBC	1.35	3.60P
Dallas	137.8	1.63/1.71	2.26/2.37	.550‡B	.96‡B	4.40b‡B	9.75‡bB			1.25BD	2.85BD
Denver	148.2	1.71/1.80	2.36/2.48	.52nr	.96nr	3.93nr		460.00nr	580.00nr	1.05m	3.50m
Detroit	142.1	1.61/1.71	2.19/2.30	.90nk	1.70nk	6.80nk	18.50nk	182.00mk	280.50mk	1.10k	4.05k
Kansas City	138.5	1.61/1.71	2.26/2.37	.61r	1.105r	6.104br	16.50r	303.00r	581.00r	1.60r	3.55r
Los Angeles #	148.6	1.70/1.79	2.19/2.30	.82bl	1.78blS	7.19lbS	16.90blST	410.00lS	590.00lS	1.24vE	3.66fvE
Minneapolis	149.9	1.67/1.75	2.26/2.37	.93oB	1.67oB	7.30oB				2.19DFH	6.31DFH
Montreal		....	....	1.13u	2.00u	7.00u	13.50u	288.00	545.00	1.17D	3.11jpD
New Orleans	133.3	1.61/1.69	2.26/2.37	.566r	1.12r	5.65r	......	240.50pr	490.00	.95il	3.75il
New York	138.5	1.63/1.71	2.19/2.30	1.02	1.49R	7.58	19.48			1.50‡B	3.60‡B
Philadelphia	137.8	1.61/1.69	2.19/2.30	.72‡	1.40‡	9.02‡r	24.68‡r	220.00‡	330.00‡	1.50‡h	4.00‡h
Pittsburgh	142.9	1.63/1.71	2.19/2.30	.69K	1.32K	8.79K	24.15K	190.00	295.00	1.66Db	3.93DB
St. Louis O	136.9	1.61/1.69	2.26/2.37	.62r	1.15r	4.92r	12.68rS	200.00r	300.00r	1.50i	3.65
San Francisco	148.8	1.70/1.79	2.19/2.30	.86‡d	1.86‡d	7.53‡d	18.00‡d	360.00‡l	620.00‡l	1.05‡Q	3.30‡Q
Seattle	149.0	1.71/1.80	2.19/2.30	.85bk	1.83kb	7.61k		250.00‡ck		1.95ky	4.55ky
Toronto	...	....	....	.80F	1.50F	6.00F		157.00F	280.00F	1.05F	4.62F

*WROUGHT STEEL PIPE

(Full standard weight)

Discount from list; see footnote

Mill	2½ & 3 in., Butt Weld* Black %	2½ & 3 in., Butt Weld* Galv. %	3½ to 6 in., Lap Weld* Black %	3½ to 6 in., Lap Weld* Galv. %
Lorain, Ohio	13.75	+2.50	+2.00f	+18.75f
Aliquippa, Pa	13.75	+3.50	3.25a	+11.00a
Sparrows Pt., Md	17.25	+1.00	......	......
Benwood, W. Va	13.75	+2.50	......	......
Youngstown, O	13.75	+2.50	3.25	+13.50a
Indiana Harbor, Ind.	12.75	+2.50	2.25ab	+14.50a
Sharon, Pa	13.75	+2.50	3.25ab	+13.50ab
Wheatland, Pa	13.75	+2.50	3.25a	+13.50a
Etna, Pa	13.75	+2.50	.50de	......
Fontana, Calif	0.75	+15.50b	+9.75ab	+26.50ab

* Threaded and coupled. a 3½ to 4 in. b Continuous weld. c: to 1.5 and 6 in. d 6 in. e Seamless f 5 in.

•† Extra quality. •§ Extra strength. •‡ delivered. •# add 4% sales tax •a PRICE INDEXES for CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. •b Extra strength. •c 4-in., $130. •d SS361-A. •f 21 in. •g culvert pipe; reinf., ASTM C 75-56. •h reinf., ASTM C 75-54. •i reinf., ASTM C 76-55. •j centrispun. •k less 2% disc. for cash. •l fob plant. •m truck del. •n LCL del., fob truck. •p less 5% disc. 10th. •p freight allowed to destination in city. •u 35,000# minimum. •r less 2% disc. 10 days. •s 1 ft lengths. •u CSA A 60. •v standard strength. •w SS; add 20% for d.s. •x fob city. •y Reinforced. •z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. •A single strength. •B truckload. •C less 2% disc. 15th. •D ASTM 76-57. •E less 1% disc. 10 days. •F less 2% disc. 30 days. •G LCL. •H CL. •I fob origin, freight allowed. •J reinf. B14-15. •K Less 2% disc. 15 days. •L ASTM 13-57. •M ASTM 200-57. •N 2 ft lengths. Trucklots. •O add 2% Sales Tax. •P 18 in. •Q less 1% disc. 10th. •S ASTMC 72, 12" 1.55, 24" 4.00. •T extra strength.

*** WROUGHT STEEL PIPE:** Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. ("based on approx. $200 per net ton): Butt Weld ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. Lap Weld 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. continuous weld same as lap weld prices. Add freight, 3% transport tax for destination price. † Production discontinued November 1957

WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: Butt Weld—1 in. black, + 65.54, galv., + 95.77; 1¼ in. black, + 65.54, galv. + 95.23, 1½ in. black, + 61.78 galv. + 91.22; Lap Weld —2½ in. to 3 in. black + 67.95 galv. + 95.77; 4½ in. to 6 in. black + 64.74 galv. + 90.68 Add freight rates plus 3% transportation tax to get destination price.

IMPORTANT NEWS
for Architects
and Specifiers

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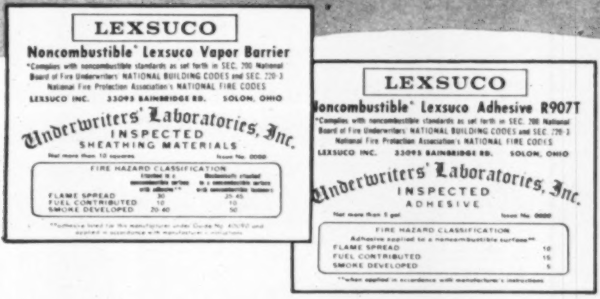
ADHESIVE
R-907-T
NONFLAMMABLE



LEXSUCO

Noncombustible* Lexsuco Vapor Barrier

*Complies with noncombustible standards as set forth in SEC. 200 National Board of Fire Underwriters' NATIONAL BUILDING CODES and SEC. 220-3 National Fire Protection Association's NATIONAL FIRE CODES

LEXSUCO INC. 33095 BAINBRIDGE RD. SOLON, OHIO

Underwriters' Laboratories, Inc.
INSPECTED
SHEATHING MATERIALS

Not more than 10 squares Issue No. 0000

FIRE HAZARD CLASSIFICATION

FLAME SPREAD	30	25-45
FUEL CONTRIBUTED	10	10
SMOKE DEVELOPED	20-40	50

**adhesive listed for this manufacturer under Guide No. 40U90 and applied in accordance with manufacturer's instructions

LEXSUCO

Noncombustible* Lexsuco Adhesive R907T

*Complies with noncombustible standards as set forth in SEC. 200 National Board of Fire Underwriters' NATIONAL BUILDING CODES and SEC. 220-3 National Fire Protection Association's NATIONAL FIRE CODES

LEXSUCO INC. 33095 BAINBRIDGE RD. SOLON, OHIO

Underwriters' Laboratories, Inc.
INSPECTED
ADHESIVE

Not more than 5 gal Issue No. 0000

FIRE HAZARD CLASSIFICATION

Adhesive applied to a noncombustible surface**

FLAME SPREAD	10
FUEL CONTRIBUTED	15
SMOKE DEVELOPED	5

**when applied in accordance with manufacturer's instructions

Underwriters' Labels will now identify the Lexsuco Vapor Barrier and Lexsuco Adhesive R907T. These products are the only ones of their kind to bear this well known label.

Noncombustible Standard met by Lexsuco Vapor Barrier and Lexsuco Adhesive R907T. Underwriters' Label granted.

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COMPARE THESE TIME- AND MONEY-SAVING ADVANTAGES:

Get a fire-retardent roof fast! Lexsuco mechanical applicator performs three operations on one pass—applies noncumbustible Lexsuco Adhesive R907T to underside of Lexsuco Vapor Barrier and puts ribbons of adhesive on top of the vapor barrier to secure the insulation.

Assured Fire Protection. With or without a vapor barrier, the Lexsuco system completely eliminates combustible asphaltic materials between the roof deck and roof insulation. When you specify Lexsuco Adhesive R907T with the Lexsuco Vapor Barrier, or the adhesive only, over metal roof deck, you get assured building fire protection.

More for Your Roofing Dollar. Lexsuco products give you far more value for the money you invest. When you put Lexsuco products in your base specifications, subject to competitive bidding, you pay little or *no* more for the extra protection and value of these noncombustible materials than you would for combustible materials.

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Better Roof Construction. On *all* roof decks—metal, poured, precast or wood—you get economical and dependable securement with Lexsuco Adhesive R907T. Where it is necessary to protect the insulated, built-up roof from moisture migration from within the building, you get proven protection with the Lexsuco Vapor Barrier.

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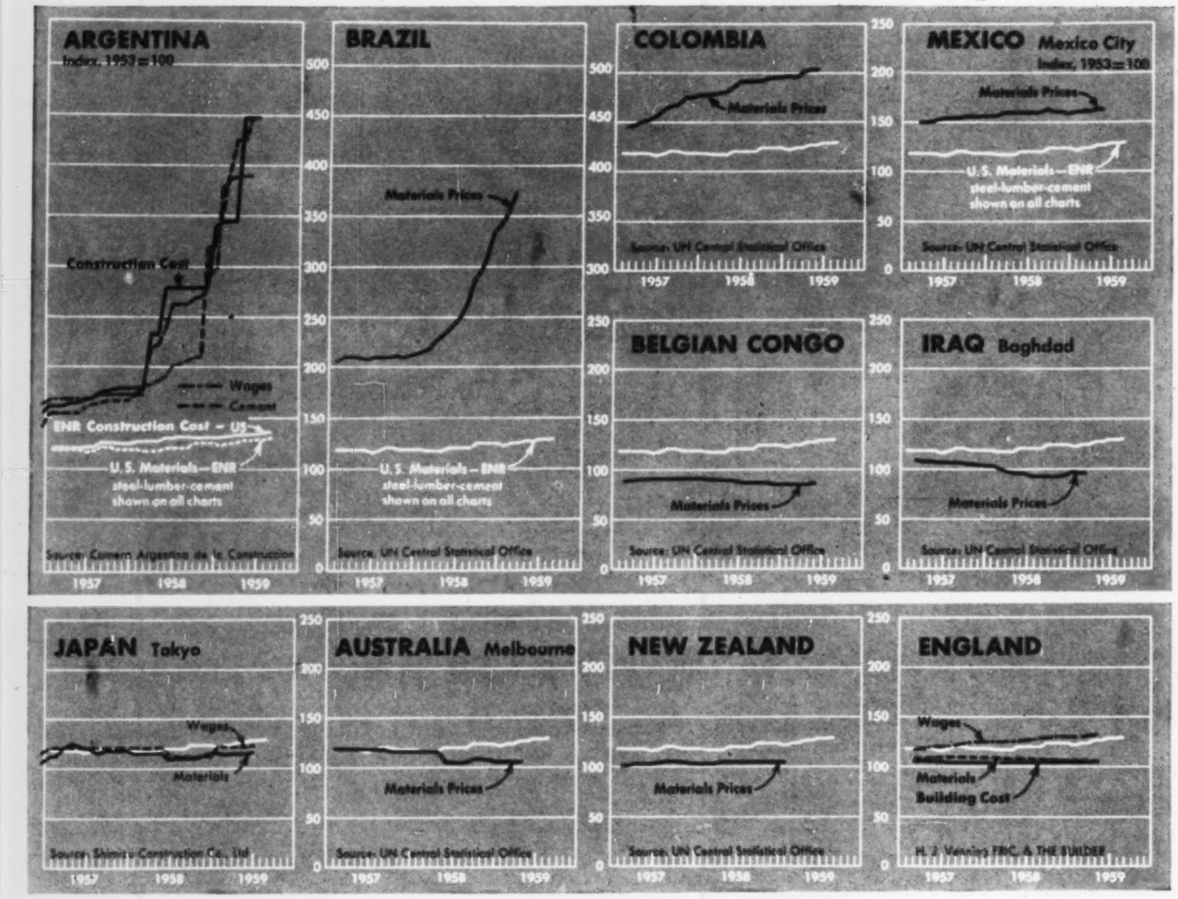
Costs Around the World



How Other Nations Are Doing in

While the U. S. is struggling with inflation, some nations are having notable success in curbing costs.

This provides new evidence that government fiscal policies are an effective aid to improved construction technology when it comes to cutting costs.

Those nations with some degree of political stability, and with a determination to steer clear of deficit financing where possible, are having the greatest success in combating the world-wide cost inflation that continues to erode the value of the construction dollar.

"Have-not" nations that concentrate on essentials—housing, agricultural and industrial development—while foregoing the temptation to use their resources for nonessential consumer goods are also having success in holding construction costs in line.

On the other hand, countries that use deficit financing and long-term development loans to finance imports of consumer goods, or for "prestige" type construction projects, are the nations suffering the most severe cost inflations.

The effect of politics on costs is obvious in Argentina, France and Egypt. Once released from Peronist control, Argentina underwent a huge cost inflation that still exists.

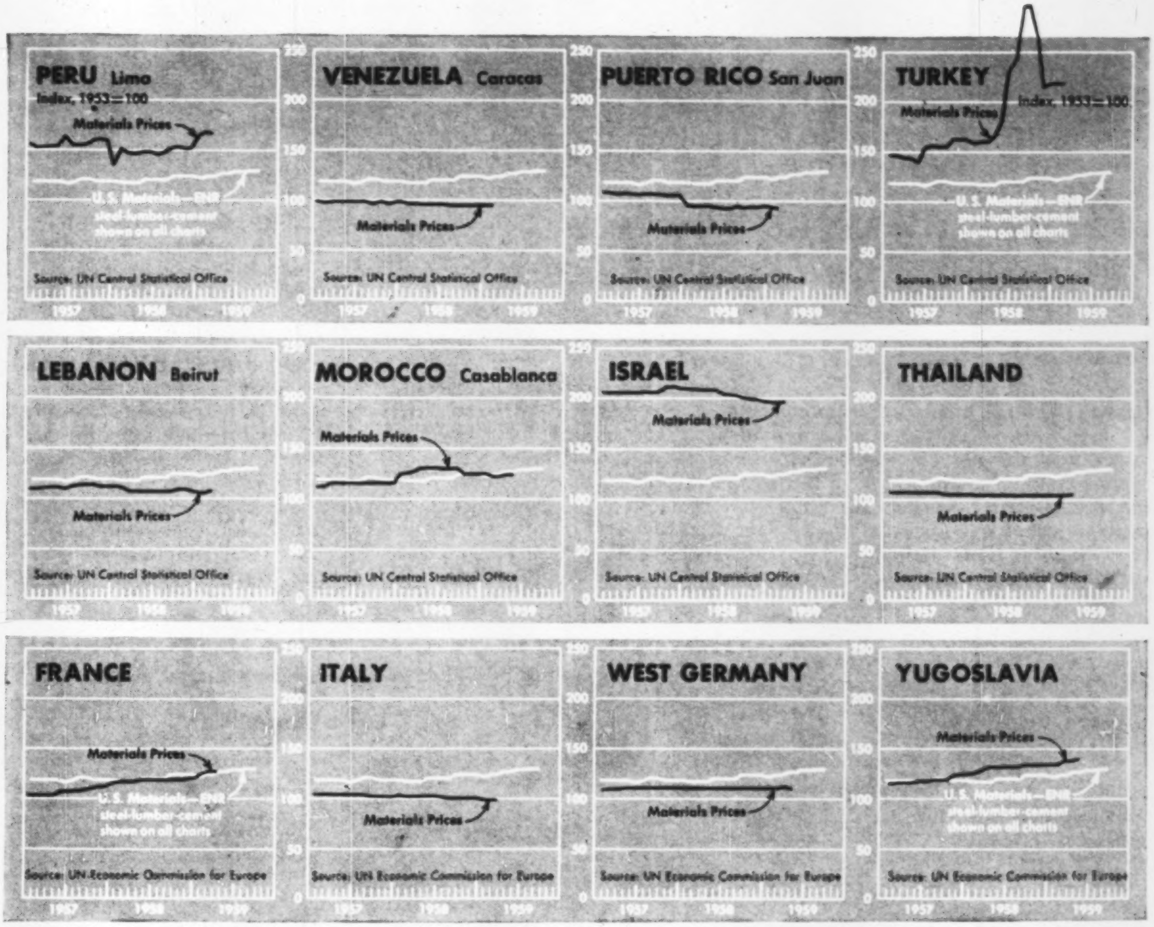
France had a similar problem. Creeping inflation kept materials prices climbing until the De Gaulle regime clamped on the lid. And the effect of France's inflation and political unsteadiness was felt in Morocco. In the Mid-East, the Suez crisis left Egypt with severe materials price distortions three years later.

While political stability is important in stabilizing prices, it is no guarantee that construction costs will hold steady, or even climb slowly. The U. S. is politically stable, and yet we are troubled by construction cost increases of about 5% annually. Brazil has one of the most stable governments in Latin America. But materials prices there have jumped 80% since the beginning of '58. The reason underlying such sharp rates of inflation is budget deficits—simply spending more than is taken in.

Those two factors—sound fiscal policy and political stability—can be as effective cost-cutting tools as first-rate construction equipment and technology. A look around the world shows how various nations are doing.

• **Latin America**—Political unrest is a constant thorn in the side of government policies throughout Latin America. It has an escalating effect on materials prices and wages. Furthermore, Latins traditionally rely on deficit financing to solve growth problems. Dictatorial regimes, such as Peron's in Argentina, and Batista's in Cuba, assured themselves of continued popularity by granting wage increases bearing no relation to productivity. These policies are still giving trouble.

Newly formed governments in Latin



the Battle Against Inflation

America face the problem of convincing the public of the virtues of national self-denial. These "austerity" programs consist chiefly of attempts to create budget surpluses through increased taxes, efforts to establish favorable (export) trade balances through import restrictions, denial of easy-term deficit financing using international loans. This type of program has the immediate effect of raising prices, and incidentally, of alienating the public by decreasing its purchasing power. If the government can endure for several years—these policies can control inflationary pressures, reduce materials prices and increase wages. Such "austerity" programs proved successful in postwar Europe, and in Asia and Africa. They are relatively new to Latin America.

Argentina's materials prices and construction costs have exploded since early '58. The nation is in the midst of a program designed to stem rising costs. Severe restrictions cut imports in half for the first four months of '59 and have brought a favorable balance of trade for the first time in four years.

But other statistics indicate the alarming size of the problem. Construction costs are up 57½% for the first five months; steel products and cement prices are up 300% since last June, and lumber prices have climbed 500% in the past year.

Labor rates have advanced 60% in the last year and pressure for more increases indicates the popular attitude toward "austerity." But if the government sells the public on national belt-tightening and continues to attract foreign investment without resorting to heavy deficit financing, the long-term outlook is for lower materials prices, controlled construction costs and balanced economic growth.

Brazil, which has turned budget deficits for the past three years to finance such "prestige" projects as Brasilia, saw materials prices jump 57% last year. But the government has recently adopted policies aimed at reducing planned expenditures, promoting exports while limiting imports and tightening credit.

Those policies could turn the tables on Brazil's inflation within two years.

Puerto Rico stands in sharp contrast to Argentina and Brazil. The enterprising island has been able to control materials prices and raise wages while enjoying the benefits of its highly successful "Operation Bootstrap."

While the rest of the hemisphere sweated out last year's recession, Puerto Rico watched its national income rise 7%. Public and private construction is at record levels and more firms (122 in '58) are building plants on the island.

Mexico, Peru, and Columbia are fighting off a 5% to 10% annual rate of inflation. Materials prices and construction costs continue to rise in these countries and the rest of Latin America.

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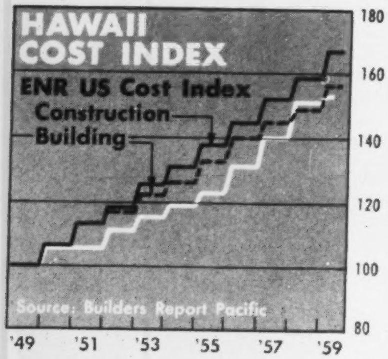


• Hawaii—The one troublesome aspect of Hawaii's current construction boom is a persistent cost push that has boosted building costs 30% since 1954. In the next decade, when demands for construction materials is expected to increase by 20%, Hawaiians will have to deal with steady cost increases.

In the past year booming construction activity ($174.4 million put in place) really put pressure on materials prices and wages.

Steel products rose about 3%, cement 3%, and lumber prices 11%. Common labor rates jumped 10½% and and skilled rates about 5%.

If Hawaii can take effective steps to control inflation, the outlook for the next decade is very bright. Consumption of basic building materials should increase about 20%, according to a recent study by the Stanford Research Institute.

Construction activity this year and next is expected to total about $203 million. The outlook for 1966-70 is for $230 million annually.

Some buildings materials price relief may be in store for Hawaii. Though she depends heavily on imports for materials, the current "cement war" between industrialists Henry J. Kaiser and Walter F. Dillingham promises more-than-adequate supplies of cement and probably some stiff price competition in the '60s.

Kaiser is building two high-capacity plants, and "native" Dillingham is building one.

• Asia and the Far East—Mounting construction costs are a problem in Asia only where industrialization has made substantial inroads. For most of Asia, food, and not housing costs, has top priority.

Japan, industrially the most advanced nation in the area, has chronic inflation problems. Materials prices have moved upward consistently since the end of the war. Prices for building materials increased 5.1% in the year ending in June, and wages advanced 7.7%. The outlook is for continuing wage-price increases in '59 and '60.

India has been able to hold down

Construction Materials Prices and

(Reported to Engineering News-Record in national currency as of June 1, 1959.

North America . . .

. . . Latin-America

	Anchorage (Alaska)		Honolulu (Hawaii)		Argentina (Buenos Aires)		Bogota (Colombia)		Mexico City (Mexico)		Lima (Peru)	
	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958
Official Exchange per $1	$1.00		$1.00		90	90	6.85	6.85	12.50	12.50	30.00	23.50
					Pesos		Pesos H		Mexican Pesos		Soles	
MATERIALS:												
Structural Steel Shapes	11.55B	11.50B	10.65Bb	10.15Bb	18,000F	6,000F	1,200F	1,120F	2,100F	2,400F	5.70J	5.20J
Reinforcing Steel Bars	10.50B	10.50B	8.75Bb	8.50Bb	14,500F	4,870F	1,000F	995F	1,900F	1,800F	4.85J	3.20J
Portland Cement	8.15C	8.15C	5.28C	5.13C	2,130F	774F	117F	117F	240F	240F	22.54a	17.52a
Lumber: 1st Class Pine	110.00Da	95.00Da			215M	58M			2,200D	1,900D	5.00e	3.80e
2nd Class Pine	110.00Da	95.00Da			175M	51M			1,900D	1,700D	4.30e	3.50e
Other	130.00Db	113.00Db	205.00cD	185.00cD	220M	60M	8.00d	6.30d		900D	4.60e	
Gravel	5a 7bA	5a 7bA	3.00E	2.80E	650Kf	305Kf	21.50G	21.50G	25K	78C	18.00Ad	11.00Ad
Sand	5a 7bA	5a 7bA	1.50E	1.00E	144K	148K	19.00G	19.00G	25K	80C	18.00Ad	21.00Ad
LABOR: a												
Common Labor:												
Heavy Construction	3.91b	3.91b	1.95b	1.75b	283.90c	178.18c	1.08b	1.08b	87.50cd	1.38b	55.80e	50.68e
Building	3.91b	3.91b	2.15b	1.95b	283.90c	178.18c	1.80b	1.80b	87.50cd	1.38b	55.80e	50.68e
Skilled Labor:												
Bricklayers	5.19b	5.19b	3.20b	3.00b	378.60c	237.57c	1.70b	1.44b	175.00cd	2.48b	80.60e	73.12e
Carpenters	4.35b	4.35b	2.85b	2.65b	378.60c	237.57c	1.70b	1.44b	210.00cd	2.48b	80.60e	73.12e
Structural Ironworkers	4.66b	4.66b	2.90b	2.80b	378.60c	237.57c	2.00b	1.44b	280.00cd	3.77b	117.80e	109.67e

•A per cu yd •B per cwt •C per bbl. •D per Mfbm •E per short ton (2,000 lbs) •F per Metric ton (2,204.6 lbs) •G per cu meter •H delivered to jobsite •J per kilo •K per cubic meter STRUCTURAL STEEL SHAPES: •a fob dock Seattle •b base price REINFORCING BARS: •b base price CEMENT: •a per sack 42 Kg. LUMBER: •a Douglas fir •b spruce •c 1fR •d per .04 cu m •e per board foot •f Brazilian pine SAND: •a summer •b winter •c 3 cu meters •d at plant GRAVEL: •a summer •b winter •c 3 cu meters •d at plant LABOR: •a incl fringe benefits and social charges •b per hour •c per week •d 48 hours •e per day •f minimum-rates

. . . Asia

	Ankara (Turkey)		Tel Aviv (Israel)		Bombay (India)		Colombo (Ceylon)		Karachi (Pakistan)		Tokyo (Japan)		Manila (Philippine Islands)	
	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958
Official Exchange per $1	2.80	2.80	1.800	1.800	4.78	4.12	4.75	4.75	4.76	4.76	360	360	2.00	2.00
	Turkish Lira		Israeli Pounds		Rupees		Rupees G		Rupees (Pak)		Yen G		Pesos (Philippine)	
MATERIALS:														
Structural Steel Shapes	1500D	1200D	431.667D	476.000D	705A	720A	925A	886A	1,000A	2,500A	48,000D	40,000D	750-950D	450-550D
Reinforcing Steel Bars	1750D	1300D	364.792D	450.000D	695A	715A	875A	749A	798A	1,450A	40,000D	35,000D	450-550D	450-550D
Portland Cement	140D	85D	88.500D	88.500D	131.50Ab	131.50A	225A	190A	85/2/0A	140/0/0A	7,000D	7,000D	3.60-3.80A	450-550a
Lumber: 1st Class Pine	600F	700F	450.00	450.00 F	8a	8a			18/0/0c	18/0/0c	4,300g	4,100g		
2nd Class Pine	500F	500F	234.000F	2.55 F	6a	6a			15/0/0c		3,900g	3,700g		
Other			218.148F	2.50 F	20ce	18ae	23c	23c	14/0/0fc	15/0/0fc			220-240Eb	230-275Eb
Gravel	33BGF	33BGF	4.684F	4.600F	43ab	31ab	18A	18A	55/0/0c	55/0/0c	1,450F	1,400F	5.50-6.00F	5.50-6.00F
Sand	30BGF	30BGF	1.863F	2.200F	32ab	20ab	5A	5A	24/0/0c	30/0/0c	880F	720F	4.50-5.00F	4.50-5.00F
LABOR:														
Common Labor:														
Heavy Construction	10.8d	9.72d	9.205d	8.895d	3d	2.75d	57½c	49½c	0/6/0c	0/7/0c	680d	630d	50cb	50cb
Building	21.60d	21.60d	9.380d		2.50d	2.25d	57½c	49½c	0/5/0c	0/6/0c	600d	530d	50cb	50cb
Skilled Labor:														
Bricklayers	21.60d	21.60d	11.015d	10.645d	6.75d	6.50d	66¼c	58¼c	0/14/0c	1/2/0c	900d	800d	75/1.25cb	75/1.25cb
Carpenters	24.30d	24.30d	11.015d	10.645d	7d	6.50d	66¼c	58¼c	1/2/0c	1/2/0c	800d	670d	75/1.25cb	75/1.25cb
Structural Ironworkers	21.60d	21.60d	11.015d	10.645d	5d	4d	66¼c	58¼c	0/14/0c	1/2/0c	900d	800d	75/1.25cb	75/1.25cb

•A long tons (2,240 lbs) •B per cu. yd. •C fob City •D metric ton (2,204.6 lbs) •E per Mfbm •F per cu. meter •G delivered jobsite STRUCTURAL STEEL SHAPES: •a local fob city •b imported fob city •c for Bombay REINFORCING BARS: •a local fob city •b imported fob city •c for Bombay PORTLAND CEMENT: •a per 94 lb sack •b at warehouse •c Jak wood LUMBER: •a per 100 Fbm •b Red Luan •c per cu. ft. •e teak wood •f Deodar •g per Koku GRAVEL: •a per Brass •b ex quarry •c per 100 cu. ft. SAND: •a per Brass •b at dock •c per 100 cu. ft. LABOR: •a per week 40 hrs •b Soc. Sec. charges: 2½% of employee's wages, 3½% from employer •c per hour •d per day construction costs through central control of prices and wages. Thus, while wage increases were granted last year, the pressure created by wage boosts on construction costs were offset by materials price reductions.

Ceylon is struggling to stave off a sharp upswing in construction costs caused by rising materials prices and wage increases.

Pakistan succeeded in reducing both materials prices and wages during the past year via martial law.

- **Middle East and Africa**—As the government goes, so go the prices. With control of wages and prices typically in government hands in the Mid-East, political stability usually results in control of wage-price inflation.

Israel, probably the best disciplined of the Mid-Eastern nations, has been able to lower materials prices and even raise wage rates while controlling construction costs. Prices for steel and lumber are down, while cement prices are steady. Aggregate prices are mixed, with sand prices down and gravel up. Israeli wages have moved up 3½% on the average over the past year.

Egypt and Turkey, both victims of tense political situations, have seen materials prices move up sharply in times of political crisis. 1957 and '58 were bad years for both regimes, and materials prices took off. Tighter controls have leashed inflationary pressures to some extent during the past year, with Turkey having the most success.

Morocco, whose economy is very responsive to French influence, has regained control of materials prices after riding a roller coaster during '58.

Both Lebanon and Iraq have succeeded in holding the price-wage line during the past year.

- **Europe**—Continental nations have had excellent results in controlling materials price increases. As a result, Europe has tremendous construction potential for the 1960s.

American manufacturers, foreseeing that exports from the U. S. will face stiff competition from the European Common Market, are hastening to invest in existing European concerns, or are building their own facilities abroad. Planned capital spending by U. S. concerns abroad will be $370 million this year, probably $415-$420 million next year.

England, where "austerity" has become routine, has been able to realize material price declines that have offset wage increases. Thus the rise of construction costs in England has been very slow.

In **West Germany,** materials prices have held the line, while wages continue to climb—exerting upward pressure on construction costs.

Italian wages have been steady for the past year, steel prices have declined, and lumber and aggregate prices continue steady. Rigid government control of materials prices and wage rates continues in **Spain,** where construction activity is still in the doldrums. Materials prices are down in **Holland,** except for aggregates, and wages are still rising.

Wages Around the World

Prices are fob and wages are per hour, except as noted.)

. . . Africa

	Caracas (Venezuela)		San Juan (Puerto Rico)		Cairo (Egypt)		Casablanca (Morocco)		Baghdad (Iraq)		Beirut (Lebanon)	
	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958
Official Exchange per $1	3.33	3.33	$1.00	$1.00	.347	.347	420	420	.357	.357	3.15	3.15
	Bolivars		$1.00		Pound (Egyptian)		Franc (Moroccan)		Dinar		Lebanese Pound	
MATERIALS:					B				B		B	
Structural Steel Shapes	600A	750A	9.50F	10.80F	80–100A	80–120A	65,900A	64,200A	60.00A	60.00A	550A	540A
Reinforcing Steel Bars	490A	450A	1.65F	4.15F	54Ab	55Ab	61,350A	58,400A	42–48A	55.00A	370A	340A
Portland Cement	107A	101A	.95F	.95F	5.50A	5.50A	8,900D	8,900D	7.25aA	7.50aA	61A	62.50A
Lumber: 1st Class Pine	260C	300C	105.00C	105.00C	31.00C	31.00C	31,360C	31,000C	35.00C	45.00C	200C	225C
2nd Class Pine	240C	280C	97.00C	97.00C	29.50C	29.50C	28,000C	28,000C			150C	175C
Other	150C	270C			..		28,880C	29,150C	25.00C	27.00C	..	
Gravel	18C	14C	4.25C	4.18C	.70C	.70C	1,000C	1,130C	1.250C	1.250C	7.50C	7.50C
Sand	17C	18C	1.95C	1.91C	.35C	.35C	400C	650C	1.500C	1.500C	5.00C	5.00C
LABOR: *d*												
Common Labor:												
Heavy Construction	15.17a	14.00a	70cb	70cb	.30a	.30a	97.50b	83b	550ca	550a	8e	6-8e
Building	15.17a	14.00a	69cb	69cb	.30a	.30a	109.00b	94b	550ca	550a	6e	6e
Skilled Labor:												
Bricklayers	25.67a	29.17a	1.12cb	1.12cb	.80a	.90a	168.00b	149b	1.900ca	1.900a	12e	12e
Carpenters	25.67a	29.17a	1.12cb	1.12cb	.75a	.75a	204.00b	188b	1.900ca	1.900a	8-12e	8-12e
Structural Ironworkers	25.67a	33.83a	1.14cb	1.14cb	.80a	.80a	234.00b	216b	2.250ca	2.250a	12-15e	12-15e

•A per metric ton (2,204.6 lbs) •B delivered jobsite •C per cubic meter •D per long ton (2,240 lb) •E fob mill •F per cwt •G per M fbm REINFORCING BARS: •b base price CEMENT: •a fob mill LABOR: •a per day •b per hour •c legislated wage rise expected •d incl. fringe benefits and social charges •e per 10 hr. day.

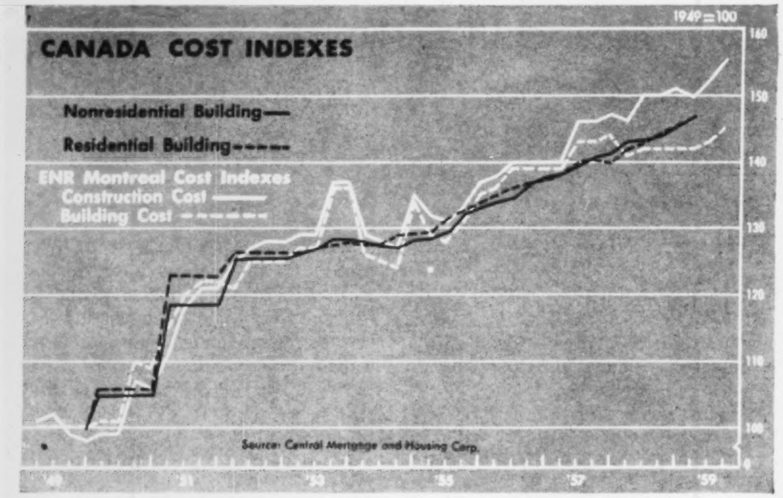
. . . Australia

. . . Europe

	Melbourne (Australia)		London (England)		Paris (France)		Milan (Italy)		Madrid (Spain)		Bonn (Germany)		Amsterdam (The Netherlands)	
	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958	1959	1958
Official Exchange per $1	9	9	7/2	7/2	493.75	420	620.60	624.80	42	42	4.17	4.18	3.79	3.79
	Shillings		British Pound		Francs		Lire		Peseta		Deutschemark		Florin	
MATERIALS:					C				C					
Structural Steel Shapes	55a/76bA	55a/75bA	43-10-0A	44-9-6A	79,040D	70,260D	7100–7700ab	7600–7700ab	14.00F	14.00F	470D	470D	472.50D	489.20D
Reinforcing Steel Bars	57a/75bA	57a/75bA	42-0-0A	43-0-0A	72,110D	64,110D	5900–6300ab	6300–6500ab	10.50F	10.50F	480	480D	443.50D	443.50D
Portland Cement	11A	11A	5-12-0A	5-4-6A	10,076D	9,309D	1180 Cb	1270 Cb	856.00D	856.00D	74.50D	74.50D	60.00D	61.50D
Lumber: 1st Class Pine	15/6/0e	15/2/0e	110–135a	148-0-0a	41,035Eb	40,682Eb	52M–54MeCF	52M–54MeCf	5,100Ed	5,100Ed	265E	265E	......	......
2nd Class Pine	....	....	92–95a	102-0-0a	30,637Eb	31,090Eb	47M–50MeCF	47M–50MeCf	4,300E	4,300E	245E	245E		......
Other	7/10/0e	6/19/0e		....			....	....	..	..	220E	220E	195.00e	224.00e
Gravel	1/15/3a	1/13/4a	1-5-5a	1-4-6a	3,321E	3,005E	500–600E	500–600E	110.00E	110.00E	7.50E	6.50E	7.90D	7.84D
Sand	1/18/0a	1/17/0a	1-6-9a	1-7-8a	3,030E	2,725E	850–1000E	850–1000E	90.00E	90.00E	9.50E	9.00E	5.32D	5.63D
LABOR:														
Common Labor:														
Heavy Construction	20/5/3f	19/16/0af	4/2½ac	4/1½bc	259.63c	249.00c	405.84c	405.84c	104.75d	104.75d	3.23c	3.10c	2.78c	2.51c
Building	24/3/3af	23/15/10af	4/2½ac	4/1½bc	259.63c	249.00c	405.84c	405.84c	90.75d	90.75d	3.35c	3.23c	2.78c	2.51c
Skilled Labor:														
Bricklayers	26/16/1af	26/9/11af	4/9ac	4/7bc	446.20c	429.00c	503.91c	503.91c	104.75d	104.75d	3.67c	3.53c	2.78c	2.51c
Carpenters	26/0/4af	25/14/2af	4/9ac	4/7bc	394.21c	378.04cB	505.76c	505.76c	104.75d	104.75d	3.67c	3.53c	2.78c	2.51c
Structural Ironworkers	22/7/9af	22/1/6af	4/7ac	4/5bc	417.95c	407.00c	503.91c	503.91c	308.55d	308.55d	3.52c	3.38c	2.35c	2.34c

•A per long ton (2,240 lbs) •B fob city •C delivered jobsite •D per metric ton •E per cu meter •F per kilo •R Revised •M thousand STRUCTURAL STEEL BEAMS: •a fob Milan •b per 100 kilos REINFORCING STEEL BARS: •a fob Milan •b per 100 kilos •c per kilo PORTLAND CEMENT: LUMBER: •a per standard •b Vosges •c per cu meter •d Balsain •e per M fbm GRAVEL: •a per cu. yd. SAND: •a per cu yd LABOR: •a add 8 3d. social charges per week •b add 7 9d social charges per week •c per hour •d per day •e incl fringe benefits & social charges. •f per 40 hr wk.

Canada's Costs Are Climbing



Source: Central Mortgage and Housing Corp.

Construction costs in Canada continue to climb. ENR's Montreal Building Cost Index is 1.8% above a year ago, but the Construction Cost Index is up 2.8%. Toronto's Building Cost Index is up 6.0% for the year, and the Construction Cost Index is up 7.2%.

Non-residential construction costs rose 3.6% across the country in the last twelve months, while residential construction costs climbed 4.3%, according to the Central Mortgage and Housing Corp. (see table and chart).

Materials price movements were mixed, but the over-all trend is up. Prices for steel are up in Toronto since last year, but have held steady in Montreal. Lumber prices in both cities are $4 a thousand board feet higher than a year ago for most grades. Cement prices have been steady for the past year in most localities.

Wage increases continue to exert upward pressure on construction costs, with increases averaging 5.4% during the past year. Canadian wages are rising considerably faster than the cost of living—some 60% of the total wage increase last year represented a real wage increase.

Canada Construction Cost Indexes—1949=100

Central Mortgage Housing Corp.

NON-RESIDENTIAL				RESIDENTIAL			
'39	57.9	'50	105.1	'39	48.1	'50	106.0
'40	60.0	'51	118.8	'40	51.2	'51	123.1
'42	67.2	'52	125.4	'42	60.0	'52	126.6
'43	69.5	'53	128.9	'43	63.7	'53	128.9
'44	70.5	'54	128.6	'44	66.4	'54	129.0
'45	71.1	'55	131.5*	'45	67.2	'55	132.7
'46	75.0	'56	136.5	'46	70.4	'56	137.5
'47	84.3	'57	141.5	'47	80.9	'57	141.3
'48	95.3	'58	145.5	'48	95.0	'58	144.7
'49	100.0	'59May	148.7	'49	100.0	'59May	149.2

Weighted indexes of wholesale prices and wage rates, Intangibles, productivity, etc., not included.

Canadian Wage and Cost of Living Changes—1949–'59

Canadian Construction Association

Unweighted average wage rate increases for 8 principal construction occupations (including vacation pay allowances)

	PERCENT INCREASE							
	in wage rates				in cost of living			
City	'49-'59*	'56-'57*	'57-'58*	'58-'59*	'49-'58*	'56-'57*	'57-'58*	'58-'59
Halifax	50.6	9.2	0.0	6.2	22.8	2.8	2.9	2.7
Saint John	55.8	2.6	7.0	2.6	24.7	3.1	1.9	2.3
Montreal	68.0	4.5	8.3	4.7	25.0	2.4	2.5	1.2
Ottawa	65.7	4.1	7.4	4.2	25.4	3.4	1.6	1.2
Toronto	61.9	4.1	5.8	10.8	28.4	3.3	2.3	−0.3
Winnipeg	73.6	6.5	6.0	5.9	22.6	2.0	2.2	0.5
Regina	60.4	4.9	3.3	4.5c	21.9a	3.2a	2.2a	0.8a
Saskatoon	57.2	3.4	3.9	3.9c	21.9a	3.2a	2.2a	0.8a
Calgary	64.1	7.1	7.7	5.6	21.3b	2.9b	1.8b	1.3b
Edmonton	55.4	2.3	7.7	6.2	21.3b	2.9b	1.8b	1.3b
Vancouver	65.5	9.0	8.4	5.2	24.6	2.0	2.4	2.1
Average, 11 cities	61.7	5.2	6.0	5.4	23.4	2.8	2.2	1.3

*July 1 to July 1 •a Saskatoon-Regina index •b Edmonton-Calgary index •c Vacation pay at 4%

Canadian Building Trades Wage Rates July 1, 1959

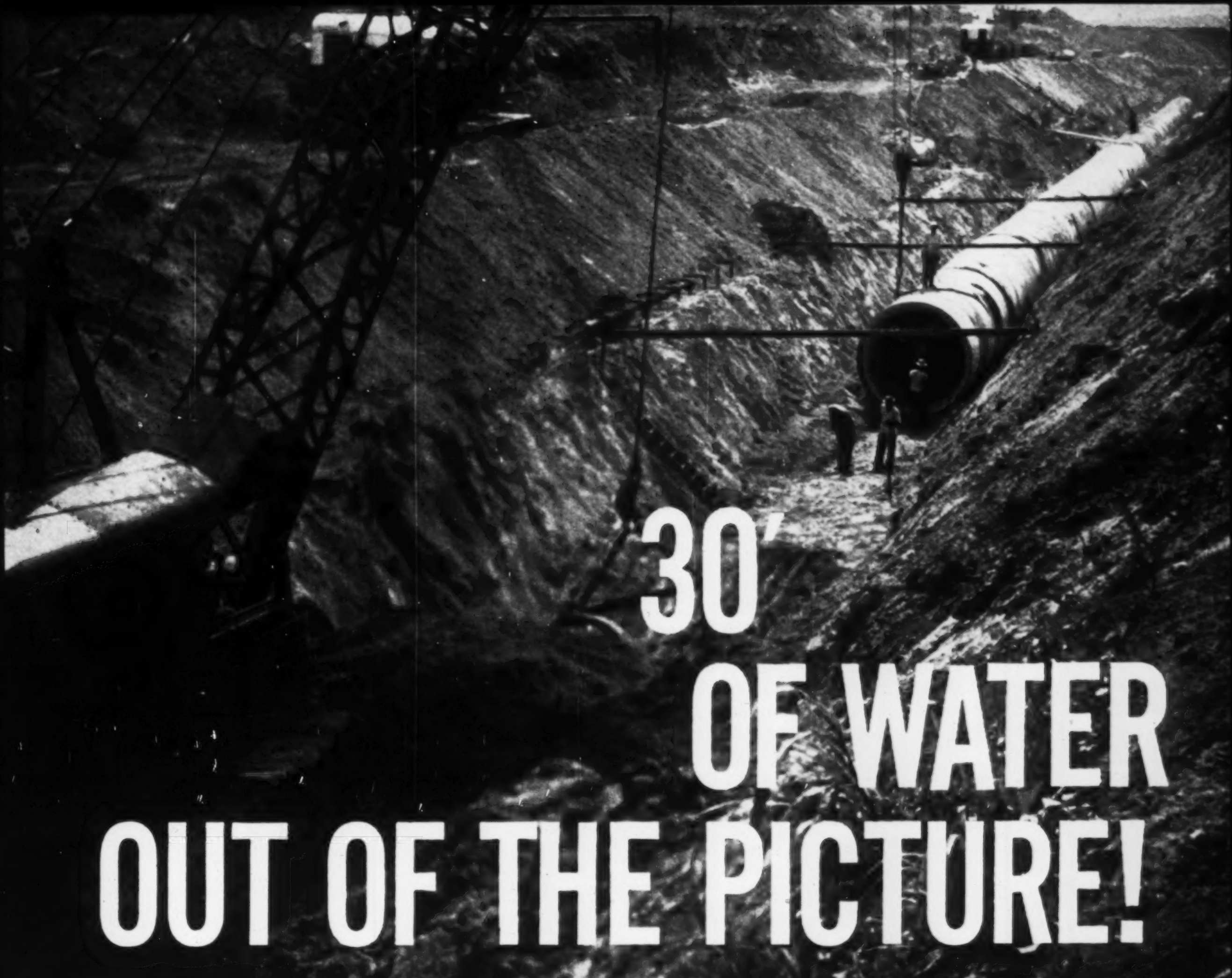
Dominion Department of Labour and Canadian Construction Association

		BRICKLAYERS				CARPENTERS				ELECTRICIANS				PAINTERS			
City		1939J	1945J	1958	1959	1939J	1945J	1958	1959	1939J	1945J	1958	1959	1939J	1945J	1958	1995
Halifax	a	$1.00	$1.15	$2.09b	$2.21	$0.70	$0.95	$1.84b	$1.95	$0.85	$1.06	$1.94b	$2.06	$0.60	$0.81	$1.60b	$1.70
Saint John		0.90	1.10	2.00	2.00	0.50-0.60	0.81	1.75	1.75	0.50-0.65	0.85	1.75	1.88	0.50-0.55	0.76	1.60	1.65
Quebec		0.75-0.85	1.00	2.00	2.30	0.55-0.60	0.80	1.80	1.80	0.55-0.65	0.80	1.90	1.90	0.50-0.55	0.75	1.70	1.70
Montreal		0.80-0.90	1.06	2.30	2.40	0.70	0.96	2.10	2.20	0.75	1.01	2.20	2.35	0.66	0.86	2.00	2.10
Toronto		1.00	1.23	2.85	3.00	0.90	1.11	2.50b	2.80	1.00	1.21	2.90	3.30	0.75	0.97	2.27	2.41
Hamilton		0.90	1.19	2.70	2.80	0.75	1.04	2.50	2.50	0.75	1.05	3.00	3.15	0.65	0.86	2.05	2.15
Windsor		1.15	1.26	2.67½	2.87½	0.95	1.18	2.50c	2.50	1.15	1.26	2.60	2.60	0.60-0.65	0.95	1.98	1.93
Winnipeg		1.10	1.25	2.50c	2.60	0.85	1.05	2.30	2.40	0.85	1.05	2.45	2.55	0.70	0.90	2.00	2.00
Saskatoon		1.00	1.20	2.44	2.44	0.50-0.75	0.96	2.09	2.16	0.70-0.80	0.93	2.35	2.34	0.50-0.70	0.70	1.80f	2.05
Edmonton		1.10	1.31	2.60	2.70	0.90	1.03	2.35	2.45	0.85	1.06	2.65	2.75	0.80	0.91	1.80b	2.00
Vancouver		1.10	1.29	2.75	2.87	0.75-0.90	1.12	2.68	2.80	0.75-1.00	1.19	2.99de	3.10	0.63-0.80	0.97	2.60	2.70

		PLASTERERS				PLUMBERS				SHEETMETAL WORKERS				LABORERS			
City		1939J	1945J	1958	1959	1939J	1945J	1958	1959	1939J	1945J	1958	1959	1939J	1945J	1958	1959
Halifax	a	$0.80	$0.95	$1.98b	$1.98	$0.85	$1.025	$1.93b	$2.11	$0.70	$0.85	$1.70b	$1.84	0.30-0.40	$0.52	$1.33b	$1.41
Saint John		0.90	1.10	2.00	2.00	0.60-0.70	0.88	1.80	1.80	0.50-0.65	0.81	1.55	1.50	0.30-0.40	0.53	1.00	1.05
Quebec		0.75	1.00	2.00	2.00	0.55-0.65	0.80	1.90	1.90	0.55-0.65	0.80	1.80	1.80	0.40	0.60	1.40	1.40
Montreal		0.80	1.06	2.35	2.35	0.75	1.01	2.32	2.32	0.65-0.75	0.96	2.10	2.20	0.40	0.61	1.50	1.60
Toronto		0.90	1.21	2.70d	2.80	1.00	1.17	2.85h	3.14	0.93	1.18	2.55fg	3.05	0.35-0.50	0.67	1.65	1.80
Hamilton		0.90	1.07	2.60d	2.75	0.85	1.07	2.70h	2.90	0.75	1.04	2.45b	2.45	0.35-0.45	0.65	1.55	1.70
Windsor		0.90	1.15	2.53	2.53	1.00	1.25	2.75	2.75	0.70-0.85	1.06	2.50	2.50	0.55	0.75	1.86	1.86
Winnipeg		1.10	1.25	2.35f	2.60	0.95	1.15	2.55	2.70	0.70	0.85	2.20	2.30	0.40-0.45	0.63	1.45	1.55
Saskatoon		0.75-1.00	1.06	2.30	2.40	1.00	1.06	2.30	2.35	0.75-0.90	0.81-0.85	2.04	2.05	0.30-0.40	0.58	1.43f	1.55
Edmonton		1.05	1.31	2.50	2.60	1.05	1.16	2.50	2.60	0.90	1.07	2.60	2.60	0.40-0.50	0.61	1.60	1.70
Vancouver		1.00	1.10	2.60g	2.85	1.00	1.19	2.70j	2.90	1.00	1.18	2.75	2.75	0.45-0.50	0.71	1.88i	2.07

•a wage rates do not include hourly allowance in lieu of vacation pay •b in conciliation •c 10¢ per hour deducted from wage rate for welfare plan •d plus 8¢ welfare contribution by employer •e lockout •f negotiating •g plus 10¢ per hour welfare contribution by employer •h plus 6¢ per hour welfare contribution by employer •i plus 7¢ per hour welfare contribution by employer •j plus 1.6% of basic rate for statutory holidays

CIRCLE 101 READER SERVICE CARD→



30' OF WATER OUT OF THE PICTURE!

Miles of 96" pipe placed in the dry at an average rate of 150' to 200' per day

Wolfe River Interceptor #1, Memphis, Tennessee
Contractor: Hardwick-Ingram Co., West Memphis, Arkansas

How was it handled? By a MORETRENCH WELLPOINT SYSTEM pumping on one side of the trench only.

This is how experienced contractors free themselves to effect important savings in work procedures on wet jobs.

Get WATER out of the picture – then **DIG . . . IN THE DRY!**

A Moretrench Wellpoint System underwrites your progress. Call us for help on any pumping problem, regardless of size.

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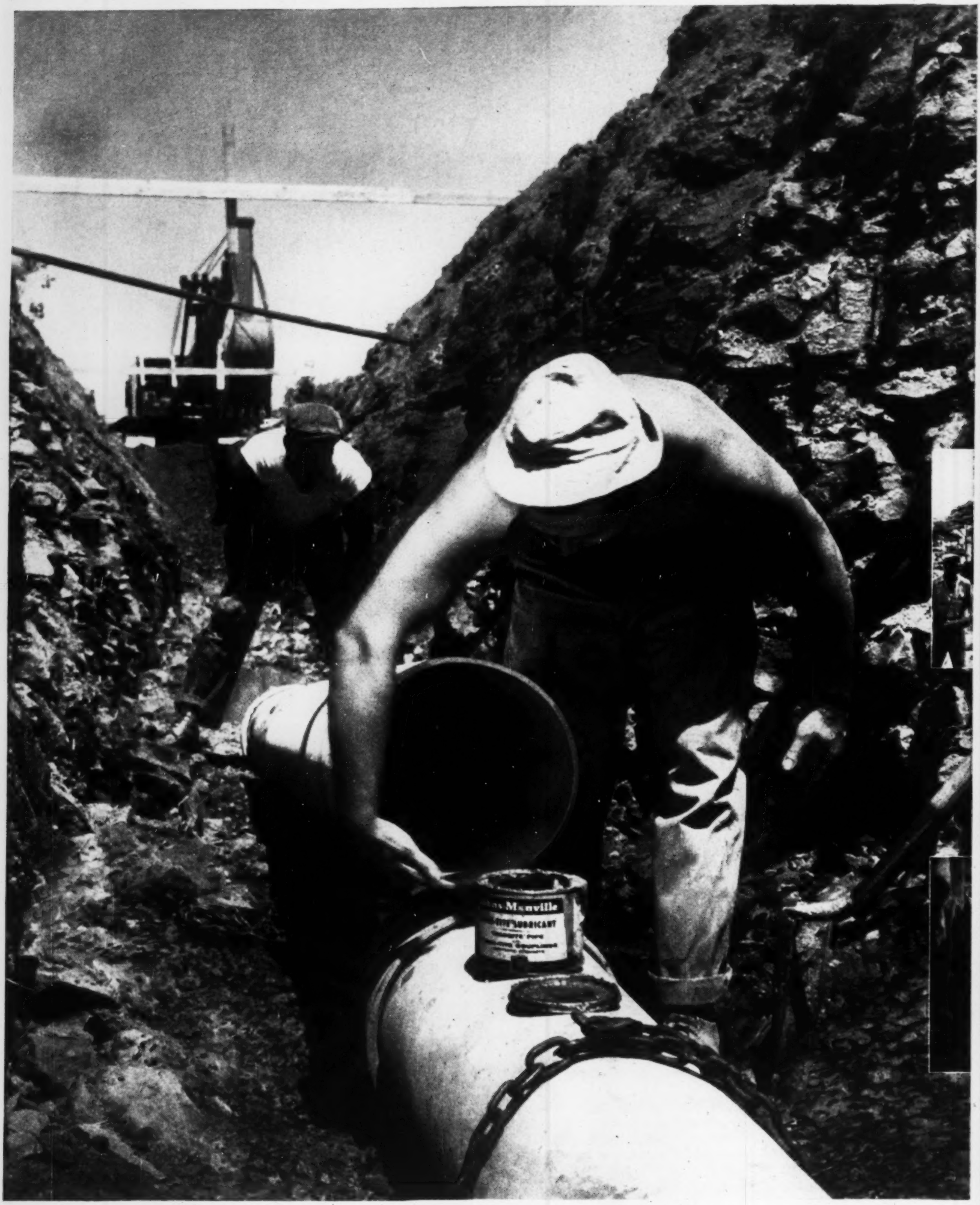
Manville
LUBRICANT

CIRCLE 102 READER SERVICE CARD

"In one day we can install as much as 600 feet of 12" Transite Sewer Pipe"

Says Ernest Renda
E. Renda & Son Contracting Co.,
Green Brook, N. J.

"Today the only way you can show a profit," says Mr. Renda, "is to increase your productivity—to lay more pipe per day. That's why we feel surer working with Transite"...

Mr. Renda continues

"It is easily handled on the ground and in the trench. It is quickly assembled and installed. It reduces job site operations to such an extent that we can work with fewer men. Another important Transite advantage is tight joints . . . and there are fewer joints to make. Never any trouble passing leakage and infiltration tests. Long Transite lengths give us a straighter line . . . better grade.

"Working with Transite gives us another advantage—the **Johns-Manville installation service,**" he continues.

"Bob Anderson, the J-M field instructor (shown at right, center photo), constantly **advises me on new methods** used on other jobs. And ten years ago, it was this same instructor who taught me to assemble Transite so that I could teach my men how to install it."

JOHNS-MANVILLE

JOHNS-MANVILLE
JM
PRODUCTS

Johns-Manville
Box 14EN, New York 16, N.Y.

Gentlemen: Kindly send me the informative, 16-page Transite booklet which is written especially for contractors.

Name____________________

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Transite® Sewer Pipe installs quickly, easily to keep installed costs low . . . its smooth interior permits flatter grades . . . and the Ring-Tite® Coupling answers the toughest infiltration and root problems. Send the coupon for your copy of TR-206A—"The Book Designed with the Contractor in Mind." Mail the coupon now!

3rd Quarterly Cost Roundup

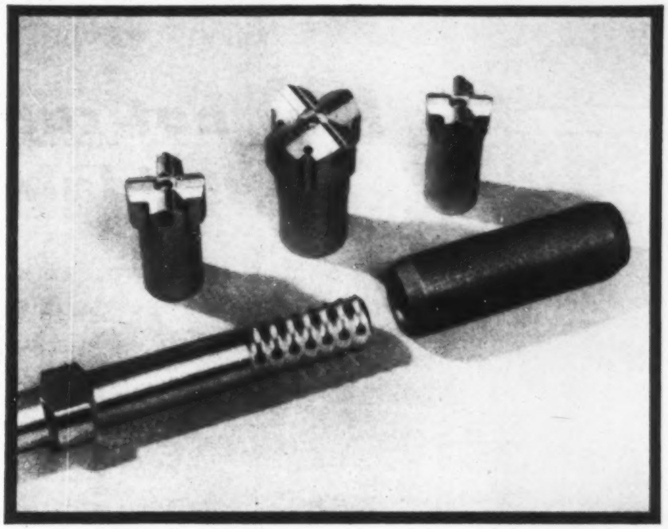
Where the Building Dollar Goes

[This is the thirteenth report in the series. Earlier reports were published in ENR Oct 8, 1953; Sept. 29, 1955; July 5, 1956; Aug. 2, 1956; Dec. 6, 1956; Oct. 17, 1957; Mar. 20, 1958; Sept. 18, 1958; Dec. 25, 1958; Mar. 19, 1959; June 18, 1959.]

Unit and Ratio Costs Supplied through the Courtesy of Maxon Construction Co., Inc., Dayton, Ohio; Swanburg Corp., Manchester, N. H.; and Ft. Washington Industrial Park Construction Co., Ft. Washington, Pa.

TYPE OF: Building	Industrial with Office		Industrial		Warehouse & Office		Dial Tel. Bldg.		Dormitories		Dormitories	
Construction: frame	Steel		Steel & Concrete		Steel		Reinf. Concrete		Steel		Concrete	
walls	Brick		Brick		Brick & Metal Panels		Brick & Block Masonry		Masonry		Masonry	
Date construction started	July, 1957		May, 1957		Dec. 3, 1958		Nov., 1957		1956 j		1957	
Location, city	Dayton, Ohio area		Dayton, Ohio area		Ft. Washington, Pa.		Central, N. H.		30 miles from Manchester, N. H.			
SIZE OF BUILDING:												
Height, stories	1 & 2		1 & 2		1 (Whse ceiling 23 ft)		3		3		3	
Floor area, sq ft	148,000 sf		309,118 sf		10,000 sf		19,854 sf		33,000 sf		53,000 sf	
Volume, cu ft	2,300,000 cf		4,700,000 cf		254,000 cf		297,400 cf		376,000 cf		476,000 cf	
air conditioned	12%		0%		20%		0% e		0%		0%	
RANGE OF COST of this type of building:					Avg.		Actual					
Cost, $ per sq ft					$10.88		$14.10					
$ per cu ft					0.42		0.94½					
ENR BUILDING COST INDEX 1913 = 100	507		503		535		517		491		509	
PRINCIPAL ITEMS OF COST					$ and % Cost							
	$	%	$	%	$	%	$	%	$	%	$	%
Excavation & Site Improvements	175,622	11.57	40,640	1.76	4,100	3.76	12,900	4.61	18,000	5.93	18,000	3.21
Foundations	196,051 a	12.92	483,161 a	20.95	13,150	12.08	17,720	6.33	13,000	4.28	130,000	23.21
Structural Frame	278,533	18.35	342,574	14.85	18,400	16.90	73,940 f	26.41	5,000 k	1.65	60,000	10.71
Cement Finish Work					In foundation				9,000	2.96	8,000	1.43
Exterior Masonry	118,877	7.83	67,529	2.93	15,725	14.44	26,200	9.36	40,000	13.18	35,000	6.25
Metal Wall Panels			.....	.....	3,945	3.62						
Interior Partitions	In masonry & carpentry				In masonry		10,440	3.73	14,000 m	4.61	19,000 m	3.39
Carpentry & Millwork	3,135	0.21	3,725	0.16	2,805	2.58	1,800	0.64	45,000	14.83	55,000	9.82
Sash & Glazing	32,393	2.14	72,858	3.16	900	0.83	3,000	1.07	21,000	6.91	5,380	0.96
Doors	In hollow metal & carpentry				2,147 c	1.97	4,100 g	1.46	In millwork		In millwork	
Roofing			In insulation		4,480	4.11	5,670	2.03	6,200	2.04	11,000	1.96
Insulation	101,768 b	6.71	100,321 b	4.35	.....	.....	In roofing					
Waterproofing & Dampproofing	3,907	0.26	4,086	0.18			8,400	3.00	4,400	1.45	3,000	0.53
Metal Lath, Furring & Plastering	8,344	0.55	1,687	0.07	1,300	1.19			11,000	3.62	18,500	3.27
Hollow Metal Work	17,603	1.16	29,916	1.30			In doors				3,300	0.59
Misc. Iron & Ornamental Metal	39,427	2.60	50,062	2.17	255	0.23	11,940	4.26			8,000	1.43
Tile, Terrazzo & Marble	6,850	0.45	3,210	0.14	798	0.73	1,040	0.37	9,000	2.96	9,500	1.70
Floor Covering	In tile terrazzo & marble				392	0.36	6,540	2.34			8,500	1.52
Painting	24,947	1.64	42,000	1.82	1,390	1.28	4,700	1.68	7,000	2.30	10,000	1.78
Finish Hardware	6,600	0.43	1,250	0.06	500	0.46	2,100	0.75	Owner furnishes		8,000	1.43
Acoustical Ceilings	5,610	0.37			1,000	0.92	3,960	1.41			4,200	0.75
Plumbing	160,595	10.58	66,375	2.88	3,600	3.31	16,540 h	5.91	63,000	20.74	90,000	16.07
Heating, Ventilating & Air Conditioning	In plumbing		223,497	9.69	10,700	9.83	27,350	9.77	In plumbing		In plumbing	
Electrical Work & Light Fixtures	185,918	12.25	535,950	23.24	7,000	6.43	31,400	11.21	26,000 n	8.56	35,000 n	6.25
Sprinkler System	57,394	3.78	55,852	2.42								
Steel Deck	94,036	6.20			3,272 d	3.00						
Precast Deck			115,672	5.02								
Metal Siding			65,812	2.85								
O. H. Crane, 5 ton					9,000	8.28						
Limestone & Granite							9,420	3.36				
Toilet Partitions							840	0.30				
Incinerator												
Kitchen											5,000	0.89
Artesian Well									1,300	0.43	16,000	2.85
Undistributed Costs									10,800	3.55		
Paving					3,325	3.05						
Landscaping					700	0.64						
Total	$1,517,610	100%	$2,306,177	100%	$108,884	100%	$280,000 j	100%	$303,700	100%	$560,000	100%

a Incl all concrete work b Sheet metal c Incl 2 motor oper O. H. doors d 20 gage e Scheduled for 100% in the future f Inc. reinf conc slabs g Incl bucks h Incl kitchenette equipment j All special equipment furnished by owner k Labor only. Materials owner supplied m Masonry n Excl of fixtures



Here's proof Coromant rope-thread bits and steels SAVE TIME AND MONEY

"Up to double the footage between sharpenings!"
"Premature rod breakage is almost non-existent!"
"40% more usable life—more resharpenings!"
"Bit and rod life are well above average!"
"Uncouple by hand all the time!"
*"More rigid—drills straighter holes!"**

**Names of men quoted available on request*

The comments above are actual quotes from project managers, job superintendents, and drill superintendents who have tested new Coromant rope-thread bits and steels. They've learned, on-the-job, the benefits they—and you—can expect!

For example: The new rope-thread (only two turns per inch) holds tight in use, yet permits hand uncoupling. Reports show that the time saved results in more footage drilled per shift. Bit footage is well above average too, with less loss of carbide inserts. Prime quality ore plus nickel-chrome alloy permits cold-rolling from billets for greater strength, life and rigidity. And only with Coromant rope-thread steels can you re-thread without heat treating, too. Do it yourself, or at any nearby machine shop.

Want to know more? There's no obligation on your part, but we'll be glad to help where we can. Just call your nearest Atlas Copco Office, or write to us at Dept. ENR-7.

Atlas Copco

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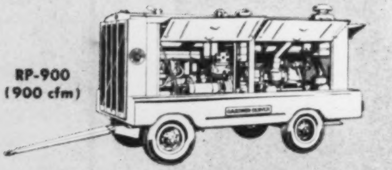
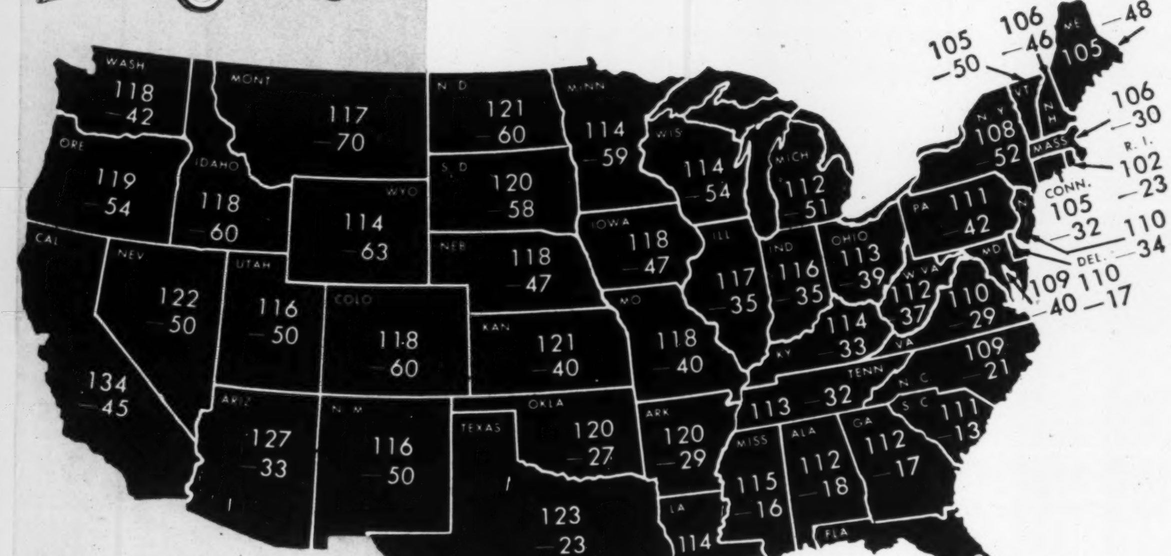
CIRCLE 105 READER SERVICE CARD

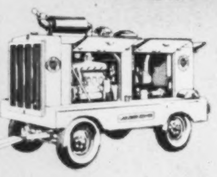


RP-900
(900 cfm)

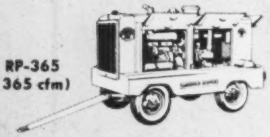
How hot can it get in Idaho?


WASH 118 -42
ORE 119 -54
CAL 134 -45
NEV 122 -50
IDAHO 118 -60
MONT 117 -70
WYO 114 -63
UTAH 116 -50
COLO 118 -60
ARIZ 127 -33
N M 116 -50
N D 121 -60
S D 120 -58
NEB 118 -47
KAN 121 -40
OKLA 120 -27
TEXAS 123 -23
MINN 114 -59
IOWA 118 -47
MO 118 -40
ARK 120 -29
LA 114 -16
WIS 114 -54
ILL 117 -35
MICH 112 -51
IND 116 -35
OHIO 113 -39
KY 114 -33
TENN 113 -32
MISS 115 -16
ALA 112 -18
GA 112 -17
FLA 109 -2
S C 111 -13
N C 109 -21
VA 110 -29
W VA 112 -37
PA 111 -42
N Y 108 -52
VT 105 -50
N H 106 -46
ME 105 -48
MASS 106 -30
R. I. 102 -23
CONN. 105 -32
N J 110 -34
DEL. 110 -17
MD 109 -40

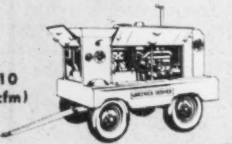
RECORD TEMPERATURES OF THE U. S.



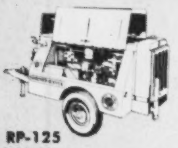
RP-600
(600 cfm)



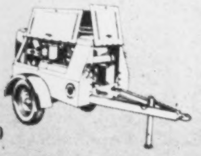
RP-365
(365 cfm)



RP-210
(210 cfm)



RP-125
(125 cfm)



RP-85
(85 cfm)

How cold in Florida?

Wherever your spread goes next—whatever the weather, you'll have the air power you need if Gardner-Denver rotary portable compressors are on the job. They're built for dependable, low-cost operation in all climates, any weather, any altitude. Choose from six sizes, 85 CFM to 900 CFM. Write for Bulletin RC-1.

GARDNER-DENVER
Since 1859
1959

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

Sewer Contracts Total $3,053,000

Ashland, Ky., sewer improvements include pumping stations and a 6.5 mgd sewage treatment plant

Vitrified clay, concrete and cast iron pipe will be laid in 6 to 30 ft cuts for this $3,052,672 sanitary sewer improvement job in Ashland, Ky., which also includes ten pumping stations, regulators, and a 6.5 mgd sewage treatment plant. J. Stephen Watkins and Howard K. Bell, Lexington, Ky., are the consultants.

The cost breaks down like this:

Contract	Amount	% of Total
I Collection sewers	$589,432a	19.3
II Interceptor sewers	888,210b	29.1
III Pumping stations and regulators	*620,367c	20.3
IV Sewage treatment plant	*954,663c	31.3
Total	$3,052,672	100.0
Engineer's estimate	3,092,285	
Amount below engineer's estimate	39,613	1.3%

a Ambrosius Industries, Inc., Louisville, Ky.
b Mountain States Construction Co., Spring Hill, W. Va.
c S. N. Nielson Co., Chicago, Ill.

* These figures reflect proportionate share of $60,000 deduction contractor took for the award of combination of contracts III & IV.

The following tabulation gives location, type of pump, capacity, maximum speed and design pressure, etc. of the pumps at the ten pumping stations:

Location	Type Pump Drive	No. of Units	Cap. at various speeds, gpm	Max. speed or speed range, rpm.	Max. design press. in ft. T.D.H.	Max. HP of Motor
3rd St	a	2	80	1,750	30	2
5th St.	a	2	80	1,750	50	5
45th St	a	2	160	1,750	45	5
Long Run.	b	1	225	1,750	45	5
	b	2	775	1,750	50	15
10th St...	c	2	600 min. 750 int. 1,850 max.	600 min. 860 max.	35	20
Winchester Ave	c	2	800 min. 1,500 int. 2,200 max.	1,150 max.	70	60
26th St...	d	1	1,000 min. 2,500 max.	1,030 ± min. 1,150 max.	51	50
26th St...	d	1	4,000 min. 6,250	825 ± min. 870 max.	53	100
26th St...	d	2	2,500 min. 4,500 max.	1,060 ± min. 1,150 max.	52	75

a Squirrel cage motor, submersible
b Squirrel cage motor, open drip proof
c Wound rotor motor
d Squirrel cage motor with variable drive

The exact speeds for the wound rotor motors and the squirrel cage motors with variable drives must be set in the field to produce the required pumping capacity.

Other work covered by the contracts includes flood wall crossings, liner plated tunnel for gravity sewer under the railroad and another sewer, force mains, gas, water and sewage force line, and related work.

It is specified that only material mined, produced or manufactured in the U. S. can be used on the job.

Class A concrete must attain a compressive strength of 4,000 psi.

Minimum wages include: carpenters $3.22; concrete finishers $3.25; bulldozer, trenchline machine and shovel operators $3.375; unskilled laborer $2.35.

The bidding included:

Contract I—Collection Sewers

1C	Ambrosius Industries, Inc., Louisville, Ky.	$589,432
2	C. F. W. Constr. Co., Inc., Fayetteville, Tenn.	610,860
4	Rocco Ferrera Co., Inc., Detroit, Mich	792,446*
EE	J. Stephen Watkins & Howard K. Bell, Lexington, Ky.	466,303

*Contractor agreed to deduct $40,000 if awarded combination of Contracts I & II

Construct new sewers, Keys Creek..

Bids: 5-20-59 Items	Unit	Quantity	Unit Prices 1 C	2
VCP, 6" house connection 8"	lf	2,800	$4.00	$3.00
std str, cut 0-6'	lf	10,525	4.55	3.50
6-8'	lf	5,500	4.75	3.75
8-10'	lf	1,855	5.00	4.25
ext str, 10-12'	lf	400	6.50	5.25
12-14'	lf	410	7.00	6.50
14-16'	lf	110	8.00	8.50
10", std-str, 0-6'	lf	1,755	4.60	4.00
6-8'	lf	2,240	4.65	4.25
8-10'	lf	350	4.80	4.50
12", str str, 0-6'	lf	940	4.65	4.75
6-8'	lf	2,955	4.80	5.00
8-10'	lf	2,225	5.00	5.75
ext str, 10-12'	lf	1,615	6.50	7.50
12-14'	lf	560	7.00	9.50
14-16'	lf	275	8.00	12.50
16-18'	lf	60	9.35	17.50
18-20'	lf	290	12.50	25.00
20-22'	lf	165	21.00	35.00
22-24'	lf	75	36.00	50.00
CIP mech jt, for gravity sewers				
8", cut 0-6	lf	75	6.40	4.25
6-8'	lf	1,335	7.50	4.60
10", 0-6'	lf	775	7.35	5.50
6-8'	lf	75	8.40	6.50
12", 0-6'	lf	585	8.75	7.00
6-8'	lf	730	9.85	7.50
8-10'	lf	290	11.00	8.25
10-12'	lf	150	12.50	8.75
4", for force main from pump station to MH	lf	110	3.15	2.25
Vitrified bends, 6"-¼	ea	100	3.50	3.00
wyes, 8x6"	ea	80	3.00	4.00
10x6"	ea	20	4.50	6.00
MH, standard	ea	162	300.00	225.00
drop	ea	12	355.00	300.00
barrel exten, 6-12'	lf	265	27.00	30.00
12-24'	lf	40	31.00	40.00
Exc, rock, pipe line trench	cy	5,900	20.00	12.50
Sand, fine gvl or cr stn for bedg pipe in rock trench	t	1,000	3.25	5.00
Conc, cl C, for cradle & or encasement	cy	50	22.00	50.00
Bituminous surface treatment	sy	60	3.50	5.00
Cr stn or gvl, traf bnd surf.	t	335	3.00	4.00
Conc sidewalk, remov & repl	sy	150	4.00	7.00
Pump sta bypass, incl 10" CIP line, 10" gate & vlv box, head-wall & tide gate	ls	job	1,400	1,000
Deduct for: use of alternate hot poured jt in lieu of PVC plastisol jt,				
6" VCP	lf	2,800	0.10	0.10
8" VCP	lf	18,800	0.20	0.15
10" VCP	lf	4,345	0.30	0.20
12" VCP	lf	9,160	0.40	0.25
alt. vit bends, 6"-¼	ea	100	1.00	0.70
wyes, 8x6"	ea	80	1.00	1.00
10x6"	ea	20	1.50	1.50

Reconstruct Long Run sewers

Bids: 5-20-59 Items	Unit	Quantity	Unit Prices 1 C	2
RCP, 6" house connection	lf	280	$4.00	$5.00
VCP, 10" std str, cut 0-6'	lf	100	5.00	5.00
RCP, ASTM C76, class IV				
18", cut 0-6'	lf	235	$7.30	$18.00
6-8'	lf	2,302	7.65	19.00
8-10'	lf	1,240	8.30	20.00
16-18'	lf	175	16.00	25.00
CIP mech jt for grav sewer,				
18", cut 0-6'	lf	295	12.25	21.50
6-8'	lf	35	14.00	23.00
10-12'	lf	55	16.00	24.00
16-18'	lf	100	24.00	25.00
RCP, ASTM C76, class IV,				
24", cut 0-6'	lf	920	13.80	22.00
6-8'	lf	775	15.00	23.00
8-10'	lf	113	16.50	24.00
10-12'	lf	42	18.00	25.00
MH, standard	ea	28	300.00	275.00
barrel extension, 6-12'	ea	97	27.00	30.00
12-24'	ea	5	31.00	40.00
RC wyes, 18x6"	ea	28	17.00	27.50
bends, 6"-¼	ea	28	6.20	5.00
Liner plate, 48" tunneled, for 18" gravity sewer	ls	job	18,450	12,500
Exc, rock, pipe line trench	cy	1,040	20.00	12.50
Sand, fine gvl or cr stn for bedding pipe in rock trench	t	400	3.25	5.00
Conc, cl C, cradle & or encasement	cy	20	22.00	50.00
Cr stn or gvl, traf bnd surf.	t	40	3.00	4.00

Reconstruct 39th St. sewer

Bids: 5-20-59 Items	Unit	Quantity	Unit Prices 1 C	2
CIP mech jt, 6" house conn	lf	300	5.40	5.00
10", cut 0-6'	lf	2,575	7.35	9.00
6-8'	lf	380	8.40	9.50
8-10'	lf	110	10.00	10.00
MH, standard	ea	15	300.00	275.00
barrel extension, 6-12'	lf	10	27.00	30.00
CI wyes, 10x6"	ea	20	73.00	75.00
bends, 6"-¼	ea	20	22.00	20.00
Exc, rock, pipe line trench	cy	200	20.00	12.50
Sand, fine gvl or cr stn for bedding pipe in rock trench	t	200	3.25	5.00

Reconstruct Hood Creek sewer

Bids: 5-20-59 Items	Unit	Quantity	Unit Prices 1 C	2
RCP, ASTM C76, class IV,				
15", cut 0-6'	lf	1,425	6.80	13.00
6-8'	lf	165	7.15	14.00
8-10'	lf	70	7.80	15.00
18", cut 0-6	lf	1,800	7.30	17.00
6-8'	lf	40	7.65	18.00
MH, standard	ea	15	300.00	275.00
barrel extension, 6-12'	lf	10	27.00	30.00
Exc, rock, pipe line trench	cy	100	20.00	12.50
Sand, fine gvl or cr stn for bedding pipe in rock trench	t	200	3.25	5.00

Commerce: 8-10-58. Complete: 450 calendar days
Liquidated damages: 75 day

Contract II—Interceptor Sewers

1C	Mountain State Constr. Co., Spring Hill, W. Va.	$888,210
2	J. R. Savage, Columbus, Ohio	924,709*
5	Rocco Ferrera & Co., Inc., Detroit, Mich	1,407,785**
EE	J. Stephen Watkins & Howard K. Bell, Lexington, Ky	858,651

*Contractor agreed to deduct $20,000 if awarded combination of contracts II, III & IV.
**Contractor agreed to deduct $40,000 if awarded combination of contracts I & II.

From 7th to 37th St.

Bids: 5-20-59 Items	Unit	Quantity	Unit Prices 1 C	2
RCP, ASTM C76, class IV				
12", cut 10-12'	lf	135	$12.82	$8.00
12-14'	lf	293	14.56	10.00
14-16'	lf	75	16.14	12.00
16-18'	lf	30	17.80	14.00
15", cut 0-6'	lf	320	9.73	6.00
6-8'	lf	685	11.17	7.00
12-14'	lf	220	19.11	9.00
14-16'	lf	545	20.73	10.00
16-18'	lf	312	22.35	15.00
18", cut 6-8'	lf	130	13.63	7.00
10-12'	lf	235	20.69	8.00
12-14'	lf	525	22.43	10.00
14-16'	lf	625	24.17	18.00
16-18'	lf	900	70.00	35.00
18-20'	lf	1,165	70.00	78.00
20-22'	lf	85	70.00	78.00

(Continued on page 108)

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STEEL and WIRE ACCESSORIES for Fast FIREPROOFING of Structural Steel

RIGID BEAM CLIP
5' lengths
— installed with lightning speed. Made of #12 or #10 gauge galvanized.

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FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

. . . Ashland, Ky. Sanitary Sewers

Bids: 5-20-59 Items	Unit	Quantity	Unit Prices 1 C	2
RCP, cl V, 15", cut 18-20'	lf	155	$24.08	$78.00
20-22'	lf	550	25.71	78.00
18", cut 18-20'	lf	25	70.00	78.00
20-22'	lf	815	70.00	78.00
26-28'	lf	40	70.00	78.00
28-30'	lf	30	70.00	78.00
21", cut 16-18'	lf	30	70.00	78.00
18-20'	lf	195	70.00	78.00
20-22'	lf	875	70.00	78.00
22-24'	lf	105	70.00	78.00
24", cut 22-24'	lf	1,215	70.00	78.00
24-26'	lf	2,015	70.00	78.00
26-28'	lf	165	70.00	78.00
36", tunneled from MH to MH	ls	job	24,985	46,920
CIP, mech jt,				
18", for gravity sewer	ls	job	967.82	1,080
10" force main, incl ftgs.	lf	1,100	8.40	10.00
14" force main, incl ftgs, not incl flood wall xing	lf	3,670	10.39	14.00
MH, standard, type A	ea	38	390.00	300.00
drop, type A	ea	6	540.00	400.00
type A, barrel ext				
6-12'	lf	240	20.25	30.00
12-24'	lf	220	20.25	30.00
24-36'	lf	10	20.25	30.00
standard, type B	ea	9	782.00	1,000
drop, type B	ea	2	982.00	1,100
type B, barrel ext,				
6-12'	lf	65	20.25	30.00
12-24'	lf	130	20.25	30.00
24-36'	lf	20	20.25	30.00
diversn, type C	ea	6	1,550	1,000
barrel ext 6-12'	lf	25	20.50	30.00
12-24'	lf	25	20.50	30.00
CM cover pipe, 21", bored, for CIP force main under RR	ls	job	4,623	4,200
Liner plate, 48", tunneled, for 18" gravity sewer under RR & Solvay gravity sewer	ls	job	12,698	15,000
CIP, 14" mech jt, xing of flood wall	ls	job	1,937	1,267
Gas, water & sewage force line, all necessary work to compl	ls	job	37,365	44,200
Conc, cl C, for cradle & or encasement	cy	20	50.00	20.00
Conc curb & gutter, remov & repl	lf	235	3.00	4.50
sidewalk, remov & repl	sy	1,500	7.20	1.00
CR stn or gvl, trf band surf	t	880	10.00	0.50
Brick & conc pavement, cut & replace with PC conc pave	sy	2,500	10.00	0.25
Shoring, shtg & bracg left ip	sf	17,500	0.10	0.01

3rd to 7th St.

Items	Unit	Quantity	1 C	2
VCP, 6" house connection	lf	100	5.00	3.00
8" std str,				
cut 0-6'	lf	130	4.41	4.00
6-8'	lf	140	6.60	4.50
8-10'	lf	130	7.68	6.00
ext str, cut 10-12'	lf	90	9.00	7.00
Vitrified wyes, 3x6"	ea	15	11.65	5.00
bends, 6" 1/8	ea	15	7.93	3.00
CIP, 4" mech jt, force main, incl ftgs but not flood wall crossing	lf	2,780	4.83	3.60
MH, standard type A	ea	3	390.00	300.00
barrel ext, 6-12'	lf	10	20.25	30.00
leaping weir, type D	ea	1	546.00	460.00
barrel ext, 6-12'	lf	5	20.25	30.00
CM cover pipe, 12", bored, for 4" CIP force line under RR	ls	job	4,399	3,800
Conc, cl C, for anchors, cradle & or encasement	cy	10	100.00	30.00
Conc curb & gut, remov & repl	lf	20	3.00	4.50
Sidewalk, remov & replace	sy	300	7.20	6.30
PC conc pave, cut & replace	sy	200	10.00	18.00
CR stn or gvl, traf bnd surf	t	60	10.00	5.00
Asph conc-paving, replace	t	20	20.00	20.00
CIP, 4" mech jt, xing of flood wall	ls	job	413.30	670.00

Commence: 8-10-59 Completion schedule: 450 calendar days. Liquidated damages: $75 day

Contract III—Pumping Stations & Regulators

		Base Bid	Alt. 26th St. Pump Station
1C	S. N. Nielson & Co., Chicago	$658,000*	$644,000*C
2	C. Ray Sykes & Asso., Inc., and Don King Constr. Co., Inc., Jackson, Ohio	681,413	682,913
10	W. L. Hailey & Co., Inc., Nashville, Tenn	944,000	949,000
EE	J. Stephen Watkins & Howard K. Bell, Lexington, Ky		774,000

*Contractor agreed to deduct $60,000 on a combination award of Contracts III & IV.

Bids: 5-20-59 Items	Unit	Quantity	Unit Prices 1C	2
Pump station, 3rd St.	ls	job	$14,000	$10,981
5th St	ls	job	16,000	16,235
Long Run	ls	job	46,000	42,662
10th St	ls	job	92,000	78,758
26th St	ls	job	293,000	293,984
alternate	ls	job	279,000C	295,484
Winchester Ave	ls	job	101,000	122,566
45th St	ls	job	21,000	16,848
Regulator, Long Run	ls	job	9,000	6,741
7th St	ls	job	6,000	10,846
10th St.	ls	job	8,000	15,562
15th St	ls	job	8,000	15,866
26th St	ls	job	27,000	35,784
Winchester Ave	ls	job	11,000	8,761
Ward Hollow	ls	job	6,000	5,819

C contract
Commence: 8-10-59. Completion schedule: 525 calendar days
Liquidated damages: $100 day

Contract IV—Sewage Treatment Plant

1C	S. N. Nielson Co., Chicago	$991,030*
2	C. Ray Sykes & Asso., Inc., and Don King Constr. Co., Inc., Jackson, Ohio	1,024,726
7	W. L. Hailey & Co., Inc., Nashville, Tenn.	1,161,013
EE	J. Stephen Watkins & Howard K. Bell, Lexington, Ky	984,331**

*Contractor was awarded a combination of Contracts III & IV, and deducted $60,000 from combined bid of $1,635,030 for these two contracts.
**Sewage treatment plant

Bids: 5-20-59 Items	Unit	Quantity	Unit Prices 1 C	2
6.5 mgd sewage treatment plant, complete	ls	job	$983,000	$1,018,246
Vib vert drain wells	ea	3	110.00	110.00
Excavation, uncl	cy	200	1.50	2.50
Borrow, earth fill,				
outside plant lot	cy	500	1.50	1.50
inside plant lot	cy	300	1.00	1.00
Rock or slag fill fndn pad, compact	t	100	3.50	3.90
Rock, slag or gvl fill under pipes, loose	t	200	4.00	2.00
Concrete, including forms				
cl A, incl reinf	cy	20	80.00	68.00
B, in place	cy	10	60.00	60.00
D, in place	cy	20	50.00	30.00
E, in place	cy	50	40.00	25.00
Alternates, add or deduct:				
Earth borrow, source of	ls	job	−3,500	−3,750
Mech screen & screenings shedder	ls	job	−6,800	−4,300
Gate vlvs, 4" & larger	ls	job	+1,000x	+1,500
Digest equip, in lieu of P.F.T., substitute				
Dorr Oliver	ls	job	−9,000x	−5,600
Walker process	ls	job	+10,000	+10,000
Vacuum filter equip	ls	job	−19,000x	−20,000
1 Komline-Sanderson vacuum filter & acces	ls	job	−41,000	−50,000
1 Over filter & access	ls	job	−31,000	−59,000

Above alternates are incorporated in the contract

Commence: 8-10-59. Completion schedule: 550 cal days
Liquidated damages: 100 day

Bidding Close for Milwaukee Airfield Work

This extension of the N-S runway at General Mitchell Field, Milwaukee, by 1,467 ft, includes connecting taxiway and warm-up pad, at a cost to the city of $1,018,080. The engineers are E. A. Howard, director of public works, and J. E. Foley, airport engineer.

In unusually tight bidding, all five contractors were under the engineers' estimate, with the award to The Druml Co., Milwaukee, 5% below and the high bid 0.5% below.

Work includes clearing and grubbing; grading; drainage; runway, taxiway and apron paving and lighting; lowering and paving College Ave., fencing and turfing. Subcontractors are Mericle Electric.

(*Continued on p. 113*)

New Cleveland water filtration plant is Powered-Up to serve industrial and residential expansion

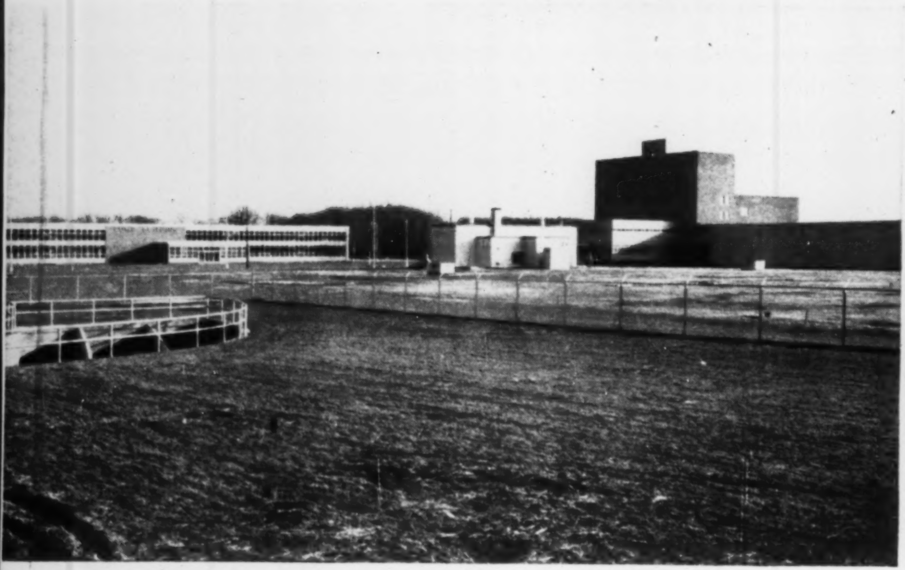
YOU CAN BE **SURE**... IF IT'S **Westinghouse**

Cover photo:

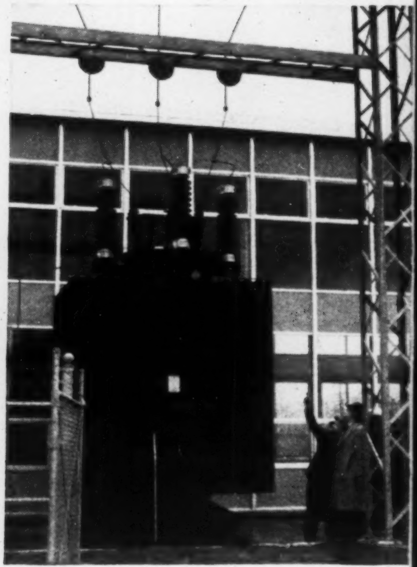
View of raw water pump suction wells illuminated by Westinghouse VEK-16 floodlighting.

Project group discussing layout of Crown Filtration Plant includes J. E. Hrovat, Vice President of Engineering, Doan Electric Co., Electrical Contractors; E. E. Croushore, Westinghouse Construction Sales Engineer; L. O. Meyer, Branch Sales Manager, WESCO, Cleveland; Dan Kasych, Chief Engineman, Pump Building; G. L. Baughman, Chief Electrical Engineer, Havens and Emerson, Consulting Engineers; S. C. Simmermacher, Chief Mechanical Engineer, City of Cleveland; M. B. Trimble, Westinghouse Construction Sales Engineer; E. S. Goulder, President, Doan Electric Co.; and H. M. Stafford, Salesman, WESCO, Cleveland.

J-94123-2



Over-all view of Crown Filtration Plant, Cleveland, Ohio. Pump building is at left and the filter building at right. Westinghouse OV-20 street lighting was provided for plant entrances and roadways.



Dan Kasych and E. E. Croushore examine one of the two Westinghouse 5000-kva power transformers which step incoming 34.5-kv service down to 4160 v for main pump drives.

CIRCLE 110 READER SERVICE CARD

Westinghouse system provides for 100% electrical load increase in new water pumping station

The new Crown Filtration Plant was designed to meet the growing need for water supply in the westerly suburbs of Cleveland, Ohio, and, as an important part of that planned expansion, the Westinghouse electrical system presently installed provides for 100% load increase without adding to the system.

The pumping station-filtration plant is located on a 55-acre site and is the newest addition to the city's expanding water supply system. Construction was started in 1953 and completed in 1958, and represents nearly a $20,000,000 investment. Present plant capacity is 50 mgd; but, because of anticipated future requirements, the plant has space and provision for additional equipment to provide capacity of 100 mgd.

Raw water is obtained through a crib 2½ miles offshore in Lake Erie. The water from the crib is carried through a connecting tunnel to a raw water well, where its handling is taken over by submerged raw water pumps. Treatment and flow of the water from this point through the filtration plant are automatic and exactly controlled, leading finally to a 15-million-gallon filtered water reservoir located in the southwest corner of the plant area. Six service pumps deliver the water from the reservoir to both the low service zone and the first high service zone supplied by the Crown plant.

The major electrical elements supplied by Westinghouse to Power-Up this filtration operation include:

Two 5000-kva power transformers—to step utility service from 34.5 down to 4.16 kv.

Main metal-clad switchgear—to control and distribute power to motor starters (for L.S.) and provide for starting of H.S. motors (1750 hp).

Dry-type power center—to provide 480-v service to plant auxiliaries.

Westinghouse lighting throughout the plant area, including fluorescent, incandescent, street lighting and floodlighting.

In addition, Westinghouse supplied the many panelboards required in the plant's operation.

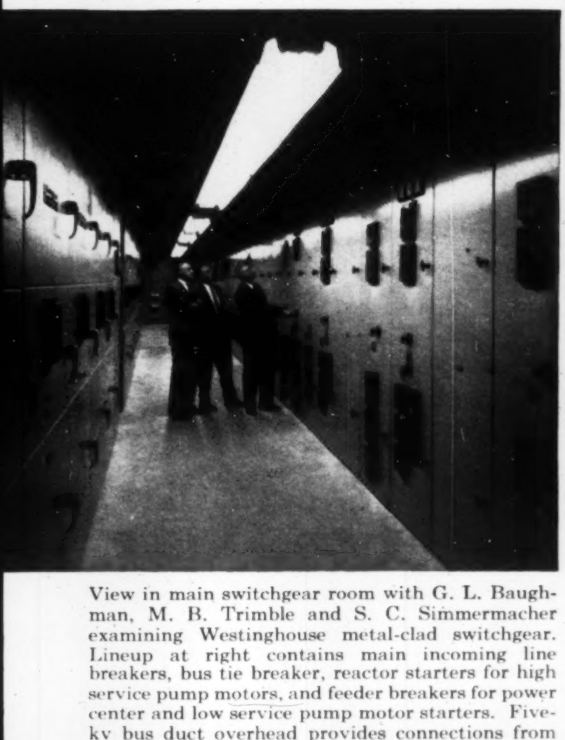
The planned Powering-Up of the Crown Filtration Plant means it can meet all foreseeable future requirements with a minimum of modification. Additional water handling and treating facilities can be installed in areas already provided for them. And all such additional equipment can be operated without adding to the existing electrical distribution system.

Cleveland now has surplus water capacity in its plants, and is in an enviable position with an almost unlimited supply of good Lake Erie water. It is ready and willing to construct additional facilities to process and deliver this water whenever the need for a greater supply for new industry is indicated.

(contd.)

YOU CAN BE SURE... IF IT'S **Westinghouse**

J-94123-3

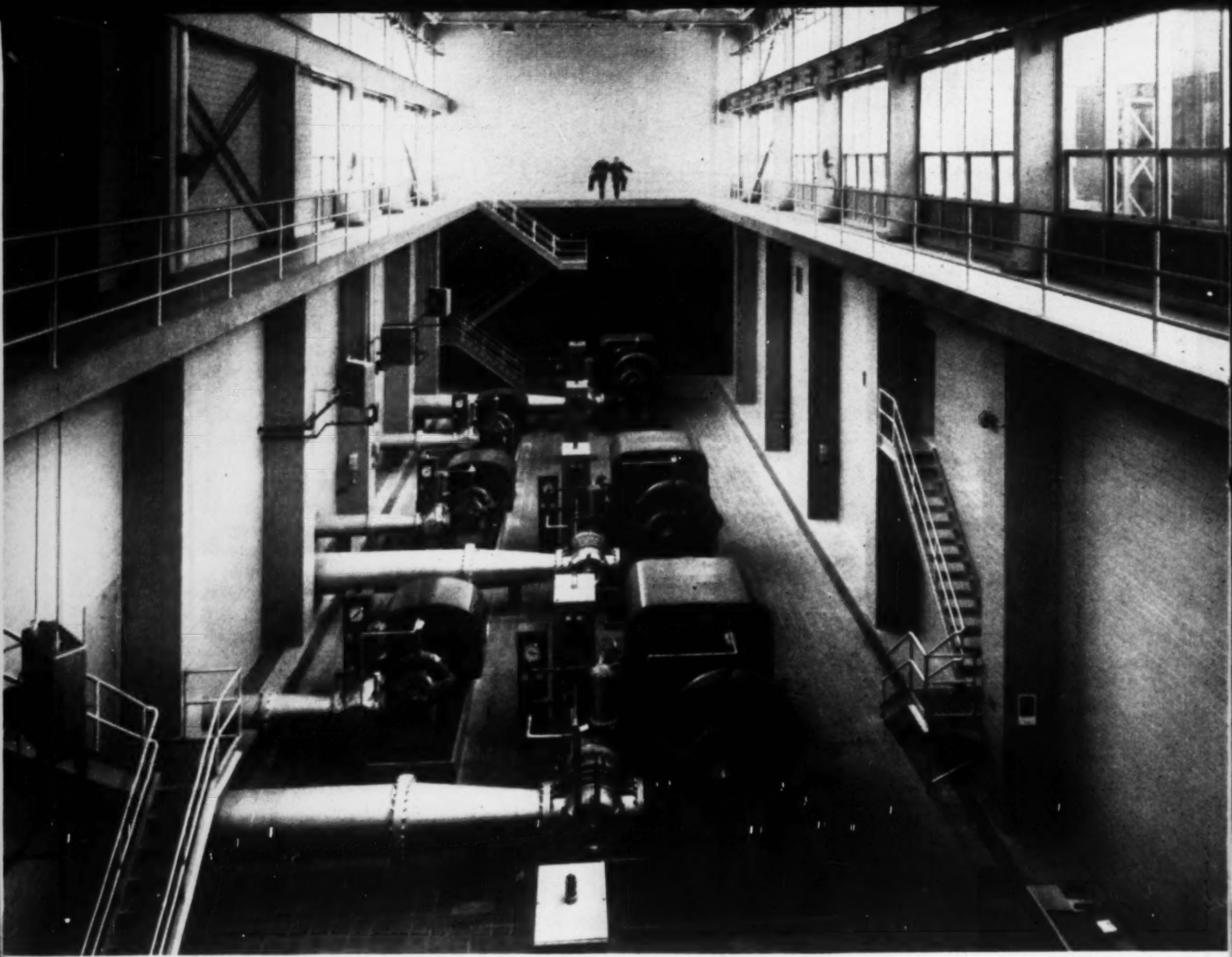


View in main switchgear room with G. L. Baughman, M. B. Trimble and S. C. Simmermacher examining Westinghouse metal-clad switchgear. Lineup at right contains main incoming line breakers, bus tie breaker, reactor starters for high service pump motors, and feeder breakers for power center and low service pump motor starters. Five-kv bus duct overhead provides connections from metal-clad switchgear to Ampgard* high-voltage fused starters at left.

*Trade-Mark

Dan Kasych inspects switchgear room. Westinghouse 225-kva power center utilizes dry-type transformers and DB low-voltage air circuit breakers to supply power panels throughout pump building. Room lighting is Westinghouse 2 SPC-75 slimline fluorescent luminaires.

Westinghouse CDP power distribution panelboard and wall-mounted 37.5-kva dry-type transformer feeding NLAB lighting panelboard. J-94123-3



(contd.)

Electrical system provides for 100% load increase

Powering-Up electrically for future growth can mean important benefits and savings for you. For further information, call the Westinghouse electrical construction engineer nearest you, or write: Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania.

J-94123-4

OWNER: City of Cleveland, Ohio
CONSULTING ENGINEER: Havens and Emerson, Cleveland, Ohio
CONSULTING ARCHITECT: Small-Smith-Reeb and Draz, Cleveland, Ohio
GENERAL CONTRACTOR: The Hunkin-Conkey Construction Co., Cleveland, Ohio
ELECTRICAL CONTRACTOR: Doan Electric Co., Cleveland, Ohio
WESTINGHOUSE DISTRIBUTOR: Westinghouse Electric Supply Co., Cleveland, Ohio

S *Over 250 Pages Westinghouse Data in Sweet's Construction File.*

YOU CAN BE SURE...IF IT'S

Westinghouse

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS"
CBS TV FRIDAYS

CIRCLE 112 READER SERVICE CARD

Section of main pump floor showing the three 25-mgd first high service pumps and three 8-mgd low service pumps which are presently installed. Metal-clad switchgear cubicles and Ampgard high-voltage starters for these and two additional future pumps of each rating are installed in the main switchgear room. High bay mercury-vapor lighting is provided by Westinghouse Millite® luminaires.

View in filter building showing row of clarified water filter beds. Under average flow conditions, the 12 filters in the plant will pass a total of 50 mgd. Lighting is supplied by Westinghouse VEK-16 floodlights.

. . . Mitchell Field

Inc., and Century Fence Co., both of Milwaukee.

Class A concrete must contain six bags of air entraining cement, by content, including weight of aggregate.

Minimum wages include: carpenter $3.45; cement finisher $3.20; electrician $3.35; common laborer $2.53.

The bidding included:

1C	The Druml Co., Milwaukee, Wis	$1,018,080
2	J. R. Griffith Co., Racine, Wis	1,044,205
5	Jos. D. Bonness, Inc., Milwaukee	1,066,659
EE	E. A. Howard, Director of Public Works, & J. E. Foley, Airport Engineer, Milwaukee	1,072,302

Bids: 6-22-59 Items	Unit	Quantity	Unit Prices 1C	 2
Clear & grub woods	ac	10.6	$200.00	$2,000
	ls	job	1,000	5,000
Grading, unclassified	cy	532,900	0.395	0.38
Pavement, remov	sy	4,050	0.62	1.00
Storm sewer, 42"	lf	700	21.40	25.00
21"	lf	340	9.10	10.50
18"	lf	8	10.00	10.00
8"	lf	830	4.30	4.00
54"	lf	1,205	33.20	38.00
Underdrains, 6"	lf	4,460	3.25	3.00
8"	lf	1,725	3.60	3.50
Catch basin, type C-5	ea	2	640.00	300.00
Inspection holes	ea	6	163.00	150.00
Headwalls, type C, 42"	ea	1	500.00	300.00
54"	ea	2	670.00	400.00
Grouted rubble 6" thick	sy	50	6.00	10.00
Granular subbase, 4½"	sy	2,200	0.40	0.50
12"	sy	66,900	0.88	1.00
Base course, 4½"	sy	2,200	0.60	0.90
Bituminous prime coat	gal	800	0.25	0.30
surface	t	250	8.50	10.00
Concrete pavement, 12"	sy	64,700	5.44	5.58
Fertilizer	ac	128	15.00	20.00
Seeding	ac	128	96.00	100.00
Fence, remov & relocate	lf	4,520	1.75	1.50
Gate, remov & relocate	ea	2	55.00	50.00
Runway & taxiway marking	ls	job	9,462	12,000
Taxiway lights	ea	38	93.00	90.00
remov & reloc	ea	4	31.25	33.00
Runway lights, remov	ea	55	15.00	20.00
marker lights	ea	31	99.50	100.00
lens replacement	ea	4	33.00	33.00
	ea	14	54.00	55.00
Light base, remov	ea	5	12.50	15.00
cover abandoned	ea	50	19.65	22.00
Cable trench	lf	7,900	0.18	0.22
5000 V	lf	4,500	0.35	0.40
3000 V	lf	7,500	0.30	0.33
600 V	lf	3,600	0.23	0.25
bare copper	lf	3,200	0.05	0.10
Electric duct, 4", 4 bank	lf	760	3.25	3.33
Transformer vault	ea	2	1,664	2,000
Obstrn marking, SW app	ls	job	532.00	600.00
NW app	ls	job	1,970	2,000
Clearing	in.ø	2,200	0.75	1.00
Grubbing	in.ø	2,210	0.75	1.00
Culvert, 3x2.5x54' remov	ls	job	250.00	200.00
3x2x54' remov	ls	job	250.00	200.00
Pavement remov	sy	9,000	0.62	0.60
Grading, unclassified	cy	330,700	0.395	0.38
Roadway finishing	ls	job	800.00	2,000
Granular subbase	t	10,500	1.80	1.50
Base course	t	4,700	1.80	1.50
Concrete pavement, 9"	sy	10,400	4.15	4.16
reinforcement	sy	10,400	0.58	0.60
Culvert pipe, 15"ø	lf	118	6.50	4.00
18"ø	lf	26	6.65	5.00
Storm sewer, 28x18" P.A.	lf	56	9.80	7.50
36x22" P.A.	lf	60	11.10	9.00
Underdrain, 8"	lf	200	3.92	5.00
Marker posts, rt of way	ea	8	5.00	5.00
Surface treatment	t	12	60.00	60.00
Topsoil	sy	63,000	0.15	0.10
Fertilizer	cwt	57	5.00	5.00
Seeding	sy	63,000	0.16	0.02
Mulching	sy	63,000	0.05	0.05

Completion schedule: 150 working days
Liquidated damages: $100 day

Coral Rock Complicates Hawaii Sewer Construction

Continuous pumping will be required during the construction of this relief sewer in Honolulu, because the invert lies in porous coral formation at an average depth of 10 ft, within 500 yd of the ocean.

Further difficulties arise from the fact that approximately 2,000 lin ft

(Continued on p. 114)

Make CONTROL JOINTS
Faster and Easier with
BLOK-JOINT
Add
BLOK-MESH
"Deep Swedged" REINFORCING
for COMPLETE PROTECTION

Blok-Joint is the cross shaped rubber extrusion used to make control joints in masonry walls. Used with ordinary metal sash blocks—no special blocks—no cutting or sawing—no bond breaking paper and mortar fill required. Simply slip Blok-Joint into the sash groove and calk the joint when the wall is completed.

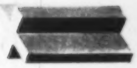
Blok-Joint forms a secure interlock that adds to the lateral stability of the wall and provides for *both* contraction and expansion.

Blok-Joint can be used in single block walls, with brick and block backup, at wall intersections and at columns and pilasters.

Additional strength and resistance to cracking is assured by using Blok-Mesh "deep swedged" masonry wall reinforcing. You can see the extra gripability of its large, squared deformations where the mortar seats for maximum bond.

Why not investigate both Blok-Joint and Blok-Mesh today!

BLOK-JOINT ®


Pat. No. 2,869,356

For Control Joints

Made of "100 year life" rubber to meet ASTM and FEDERAL specifications. Comes in four lengths—8", 24", 48" and 50 foot rolls.

BLOK-MESH ®

Side View

"Deep Swedged" Reinforcing

Large, well defined, squared notches to give a deeper, stronger mortar grip than with conventional reinforcing with superficial nicks and burrs. No sharp edges to irritate hands. Butt welded to lay flat. Cuts and bends easily.

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CIRCLE 113 READER SERVICE CARD

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. . . Hawaii Sewer

of pipe will be laid in major traffic arteries, where other utilities within the trench allotment will be major obstacles.

The Department of Public Works for the City and County of Honolulu awarded the contract to Moses Akiona, Ltd., Honolulu, at $206,042, 5.7% above the engineer's estimate.

Work is designed to provide additional sewerage in an area undergoing intensive development. It includes the laying of 1,160 lin ft of 18 in. and 1,855 ft of 24 in. reinforced concrete pipe; sidewalk sand driveway repairs, and related work.

Reinforced concrete sewer pipe must conform to ASTM designation C-76, with modifications.

Prevailing wages include: carpenter $2.85; concrete and clay pipelayers $2.25; crane & power shovel operators, under ½ yd $2.65; 1 yd and over $3.15; trenching machine operator, 5 ft and under $2.40, over 5 ft $2.80; common laborer (construction) $2.15.

The bidding on this sewer included:

1C	Moses Akiona, Honolulu	$206,042
2	J. M. Tanaka, Honolulu	212,874
6	Territorial Contr., Honolulu	292,427
EE	Dept. of Public Works, City and County of Honolulu	195,000

Bids: 7-2-59 Items	Unit	Quantity	Unit Prices 1C	 2
Exc, incl bkfl for trenches, manholes & appurt	cy	5,850	$19.43	$21.85
VCP, 6"	lf	30	10.00	3.75
12"	lf	32	12.00	8.75
RCP, 18"	lf	1,158	11.88	10.25
24"	lf	1,855	16.45	13.90
Conc cradle for 6" VCP	lf	30	2.50	1.75
12" VCP	lf	32	5.00	1.90
Cr rock cradle for RCP	cy	525	8.38	7.50
subbase, MHs & structs	cy	30	9.00	7.50
MH bases, reinf conc, incl reinf stl & MH rungs	ea	16	80.00	60.00
frame & cover, cast iron	ea	16	45.00	40.00
walls, brick or precast incl rungs & plasterwork	lf	65	35.00	38.00
walls, reinf conc, cast in pl, incl reinf stl & rungs	lf	125	40.00	60.00
special, sta 18 + 54.79, cip	ls	job	2,500	850.00
20 + 62.32, cip	ls	job	3,000	890.00
Reconn exist 6" VC sewer laterals to new sewer, where grade conflicts	ea	3	100.00	100.00
6" VC saddle Y, cip	ea	3	50.00	10.00
⅛ bends	ea	3	10.00	10.00
Cut & plug exist 6" VC sew lat	ea	4	50.00	50.00
Conc sidew & drwy, recon	sf	2,150	0.90	0.70
Asph mac pave for repair of sewer trench on city roads	sy	220	3.60	3.60
Asph conc 2" wear surf on 6" conc base, cip	sy	220	8.10	8.10
Repave sewer trench w 2" asph conc surf crse on cr rock base in priv drwys, cip	sy	185	4.50	5.00
sewer trench on Ter Hwy	sy	620	7.50	5.25
PCC 8" pave, incl subbase, on Territorial Hwy, cip	sy	10	12.00	15.00
Asph, slow cure (SC4) for temporary repaving	t	80	20.00	20.00
Exc, extra below required for pipe & cradle & or jacket, incl shtg, shorg, unwaterg & incidentals	cy	800	5.00	9.00
Rock fill (2B for soft spots, incl unwaterg & incid	cy	800	8.00	8.00
Haul excess excavation	cy-mi	200	1.00	0.50
Conc drain tile, 8"	lf	3,000	1.00	1.75
Conc, class B	cy	10	45.00	50.00
Conn to exist MHs, incl reconstr exist MH trough	ea	2	150.00	200.00
Cutting by Div of Sewers, of exist sew enclosed in a new manhole	ea	5	200.00	200.00

cip Complete in place

Construction schedule: 210 cal days.
Liquidated damages: $50 cal day.

(*Unit Prices continued p. 118*)

Which will you Retire First… the Bonds or the Sewer?

Will your bond-financed sewer system serve for generation after generation, far beyond the date the last bond is paid? Or will it have to be replaced before the bonds are retired.

The surest way to make certain today's dollars are buying generations of dependable service is to specify Clay Pipe . . . *it never wears out.* Clay Pipe does not rust, rot, corrode, or disintegrate. New long lengths with factory-made compression joints make Clay Pipe easier to install and tighter than ever before. Clay Pipe handles ground garbage, detergents, hot liquids, chemicals, acids, anything that empties into the sewer. When you specify Clay Pipe you'll never have to apologize for it or explain any failures. You'll be sure it will still be in service long after the bonds have been retired . . . Only Clay Pipe has *all* the features you can trust!

C-259-4A

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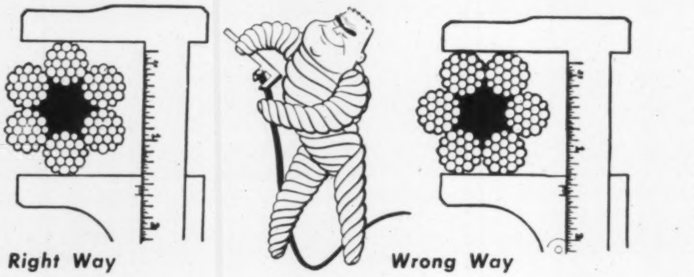
CIRCLE 115 READER SERVICE CARD

Tuffy® *Wire Rope* Tips

When Sheaves, Sockets and Clips Misfit . . . Your Pocketbook Will Be Hard Hit

How to Measure Rope Diameter



Right Way

Wrong Way

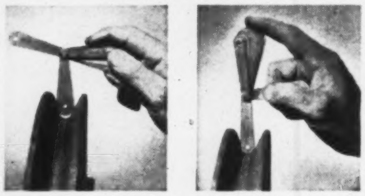
To get the most service, efficiency and safety out of wire rope operation, rope and sheaves must be precisely fitted to each other. There's only one right way to measure rope diameter: use machinist's calipers and be sure to measure the **widest diameter.**

A slight shift of the rope in the calipers, as shown above, will give you a misreading which would result in ordering an undersize rope. Note that the measurement at right shows ⅛" under correct diameter. Be sure to double-check every time!

Tuffy Balanced Dragline Rope

Here's highest abrasive resistance with super flexibility. Better spooling. Smoother riding on grooves. And Tuffy Dragline Rope hugs the drum when casting for full load. Gives you longer service life, consistent dependability, in handling any material — wet or dry dirt, sand, gravel, rock, cement or minerals.

How to Check Groove Diameter



No Go

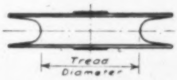
Just Go

Groove diameter of a sheave or drum must never be less than the actual calipered diameter of the new rope. When a new rope is installed on old equipment, use a reliable groove gauge to make sure the tread or bearing surface of all sheaves is of sufficient size to avoid pinching the rope.

Kick Out Worn Sheaves

Old sheaves may never die, but in "fading away" they develop conditions which shorten rope life. Sheaves with grooves corrugated with rope lay impressions should be replaced with new ones before new wire rope is installed.

How to Measure Tread Diameter



Easy, and important. Select the smallest sheave or drum to be used with the new wire rope, and measure actual diameter at lateral center (shortest dimension) of tread.

Tuffy Balanced Slings & Hoist Lines

"Balanced" because they combine strength, flexibility and toughness in the proper relationship to do a better job longer.

Tuffy Slings and Hoist Lines are a top-performing team in every type of materials handling. The slings are made of a patented, machine-braided fabric that's next to impossible to knot or kink. The hoist lines are a special construction in which strength, flexibility and toughness are balanced.

Tuffy Balanced Scraper Rope

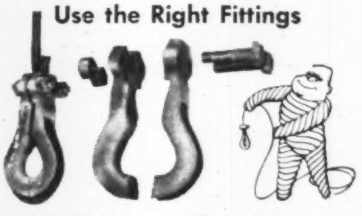
"Balanced" construction makes it flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Also gives higher resistance to the shock of load impact on slack line. Moves more yardage per foot because it's specially built to take the beating of drum-crushing abuse.

Tuffy Balanced Dozer Rope

Built to give you longer service with less downtime. Mounted on your dozer, a 150' reel of ½" or 9/16" can give you a big bonus of extra service. Here's how: when rope shows drum wear or is crushed on the drum, you feed through just enough to replace the damaged part. You save the 40 to 50 feet ordinarily thrown away. Also available in 300' and 500' reels.

CIRCLE 116 READER SERVICE CARD

Use the Right Fittings



Right fittings add life expectancy to wire rope. Fittings which derive holding power from crimping action are harmful.

Shown here is a clamp that has no "wrong side"—can be put on either way. It snugly saddles the rope, grips larger surface area in such a way that loads are carried almost entirely by friction instead of crimping action. Combined in its two parts is a thimble. The parts are interlocked to prevent collapse of the thimble and eliminate all shear on the bolts.

Recommended sizes:

Diameter of Rope	Min. Dia.	Max. Dia.
1/4 - 5/16	+ 1/64″	+ 1/32″
3/8 - 3/4	+ 1/32″	+ 1/16″
7/8 - 1 1/8	+ 3/64″	+ 3/32″
1 1/4 - 1 1/2	+ 1/16″	+ 1/8″
1 5/8 - 2 1/4	+ 3/32″	+ 3/16″
2 3/8 and larger	+ 1/8″	+ 1/4″

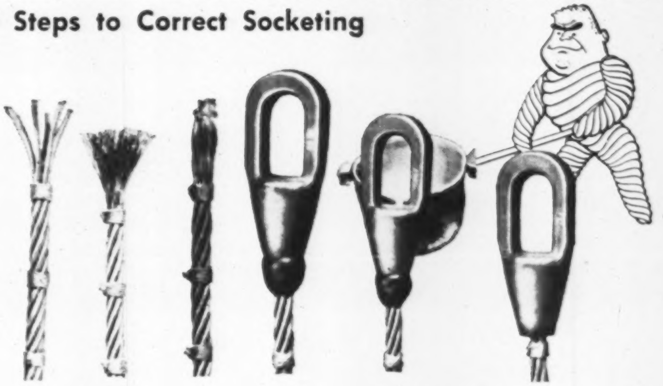
New ropes are usually over-size. It is advisable to have groove diameters of sheaves or drums as large as the actual calipered diameter of the new rope, or slightly larger. We recommend sizes as above charted.

FREE!

Complete Splicing and Socketing Manual with engineer's notebook on wire rope constructions and specifications. Write for your copy now. Address Union Wire Rope Corporation, 2228 Manchester Ave., Kansas City 26, Missouri.

Specialists in high carbon wire, wire rope, braided wire fabric, stress-relieved wire and strand.

9 Steps to Correct Socketing



1. Securely seize and serve with soft wire ties before cutting, and have at least two additional seizings placed at a distance from the end equal to the length of the basket of the socket.
2. When the rope is properly seized, take off the end seizing. Cut the fiber center back to the seizing, as shown in 1 above. Untwist and broom out the wires. See illustration 2.
3. Clean the wires for the distance they are to be inserted in the socket. Use benzine, naphtha, gasoline or other solvent. Then wash off in boiling water or boiling ammonium chloride used in Step 5.
4. Then dip cleaned wires in commercial muriatic acid to a depth not greater than 3/4 of the cleaned length of wire. Keep the wires immersed for 3 minutes, or until the acid has thoroughly etched each wire. Be sure acid does not contact any other portion of rope.
5. Immerse wires into boiling ammonium chloride. A white coating will be left on the wires.
6. Place a temporary tie wire over the ends of the cleaned wire (see illustration 3). Be careful not to get the cleaned wires greasy or oily.
7. Insert the rope end into bottom of socket. Remove temporary tie wire.
8. Holding the rope vertically in a vise, set the socket so that the wires are flush with top of the socket basket and seal the bottom with putty or clay (See illustration 4). Pour in among the wires about 1/2 teaspoon of sal ammoniac crystals.
9. Pour molten zinc into the basket until it is full (see illustration 5). When zinc is solidified, the seal is removed and socketing complete as shown in illustration 6. The zinc must not be too hot or it will anneal the wires, particularly of small ropes. Temperature must not be above 925° F. Use pine stick test: if stick chars but does not ignite, the zinc is ready to pour. Overheated zinc will have a red color and stick will catch fire. When zinc has solidified sufficiently, the socket may be plunged into cold water.

UNION Wire Rope is Balanced for Greatest Efficiency, Service Life and Safety

Every one of the Tuffy Special Purpose Ropes has a different combination of such properties as strength, toughness and flexibility.

That's because each Tuffy is "job prescribed"—made to perform best under the conditions of its special use.

You hear a lot about extra strength in wire rope. It's no trick to design rope with very high strength. The main thing is to get the proper balance of strength with other qualities needed.

Which is just what you get in every Union Wire Rope product. Why settle for less?

Your Tuffy Distributor Will Help You Get All the Extra Service Life We Build Into Wire Rope

UNION *Wire Rope*

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OTHER SUBSIDIARIES AND DIVISIONS Armco Division • Sheffield Division • The National Supply Company
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ONLY RAMSET

has the exclusive RED TIP fastener

with guaranteed performance

Red Tip fasteners—over 100 threaded studs, drive pins and eye pins—are made to do a *better* fastening job into concrete or steel. Produced from top-quality steel and austempered for extra strength, these fasteners are your best buy for efficient, trouble-free powder-actuated fastening.

Ramset Red Tip fasteners are guaranteed on every approved application! Under Ramset's unique "100-for-100" guarantee, you pay only for the number of fasteners called for on your plans. Insist on the Red Tip fastener . . . call your Ramset dealer today for details—he's listed under "Tools" in the Yellow Pages!

Red Tip serves as guide in barrel of tool, and indicates proper penetration.

In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set® hammer-in tools for light fastening, and Ringblaster® heavy-duty kiln gun.

Ramset® Fastening System

WINCHESTER-WESTERN DIV. • OLIN MATHIESON CHEMICAL CORPORATION
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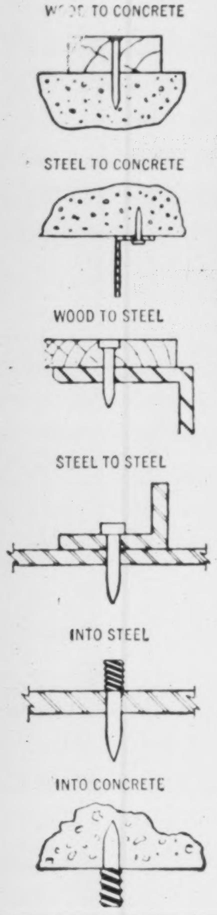


Distance from Supplies Is Problem on Nicaragua Job

Extremely heavy rainfall and the 150 miles supplies must be hauled to the isolated site, create difficult problems for the contractor on this Rama Road bridge project in Nicaragua, for the Bureau of Public Works, Department of Commerce, Inter-American Highway Division, Washington, D. C. Perry Leaming, Managua, Nicaragua, is the engineer.

The award at $893,383 to Nello L. Teer, Durham, N. C., bidding jointly with Nello L. Teer Co. of Central America, was 8% under the engineer's estimate. Only one of the remaining five bids came from Nicaragua, two coming from Indiana, one from New York and one from Oklahoma.

Contract is for seven bridges over the Muhan River, approximately 150 miles from Managua. Six, for a total length of 1,136 ft, will be of steel I beams. The seventh is a 567-ft deck truss.

Structural steel is furnished by the government at the site of the project. Class A concrete must conform to specifications FP-57.

The bidding included:

1C	Nello L. Teer, Durham, N. C. and Nello L. Teer of Central America	$898,383
2	Buckman & Hanson, Inc., Fort Wayne, Ind	994,010
6	Traylor Bros., Inc., Evansville, Ind	1,191,531
EE	Perry Leaming, Managua, Nicaragua	969,474

Bids: 8-6-59 Items	Unit	Quantity	Unit Prices 1C	 2
Force acct work, extra & misc	ls	job*	$8,000	$8,000
Borrow exc, case 1	cm	40,000	0.95	1.00
Excavation, struct, bri	cy	8,869	17.50	17.00
Subbase, place special gov-furn materials	cm	1,200	2.50	0.75
Prcst conc piles, furn & drive	lf	2,070	18.50	19.00
Conc, cl A, type 1, low alkali, cement	cy	4,269	95.00	103.00
Steel, reinforcing	lb	539,120	0.24	0.25
structural, erect	lb	1,459,930	0.06	0.10
Concrete bridge railing	lf	3,362	5.00	7.50
Riprap, loose	cy	142	15.00	6.00
heavy grouted	cy	470	20.00	18.00

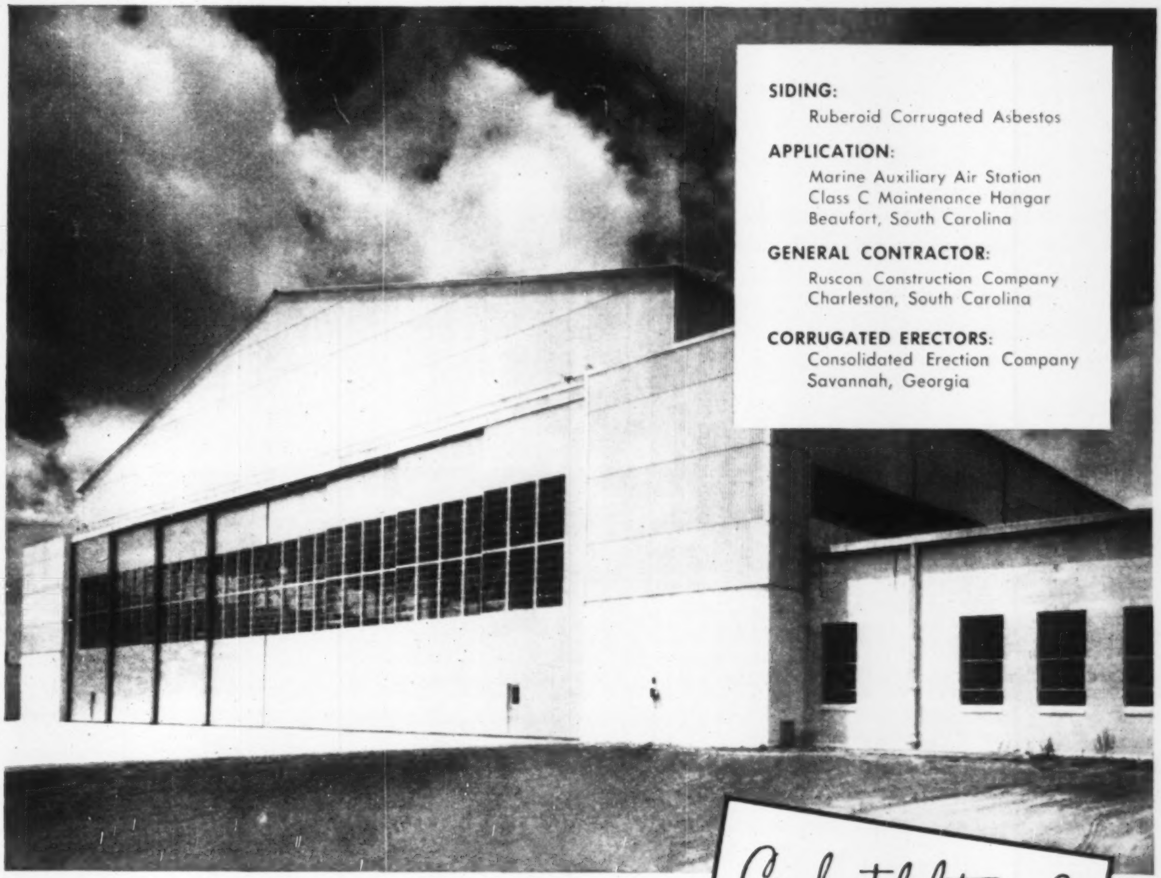
*Contingent sum. cm Cubic meter
Complete: 6-30-61. Liquidated damages: $200 day

Second Low Bid Takes Transmission Main

Contractors were given their choice of three alternates for the 25,200 lin ft of pipe for this 42-in. transmission main near Buffalo, N. Y., part of the Erie County Water Authority's Sturgeon Point project. Buck, Seifert and Jost, New York City, is the consultant.

Bidding on a 270 calendar day time schedule, 130 days under that of the low bidder, R. C. Vogel, Inc., Buffalo, second low, took the contract with a bid of $975,833 on Alternate A, the prestressed concrete steel cylinder pipe. Of the 18 contractors who competed for this job, only nine bid on Alternates B, cement-mortar-lined, coal-tar-enamel

(*Unit Prices continued p. 120*)



SIDING:
Ruberoid Corrugated Asbestos

APPLICATION:
Marine Auxiliary Air Station
Class C Maintenance Hangar
Beaufort, South Carolina

GENERAL CONTRACTOR:
Ruscon Construction Company
Charleston, South Carolina

CORRUGATED ERECTORS:
Consolidated Erection Company
Savannah, Georgia

Underwriters' Laboratories, Inc. rates Corrugated Asbestos like this:

Combustibility – 0
Flame Spread – 0
Smoke Production – 0

Ruberoid Corrugated Asbestos Siding is 100% incombustible: cannot ignite or feed a fire. It does not conduct electricity or aid galvanic action.

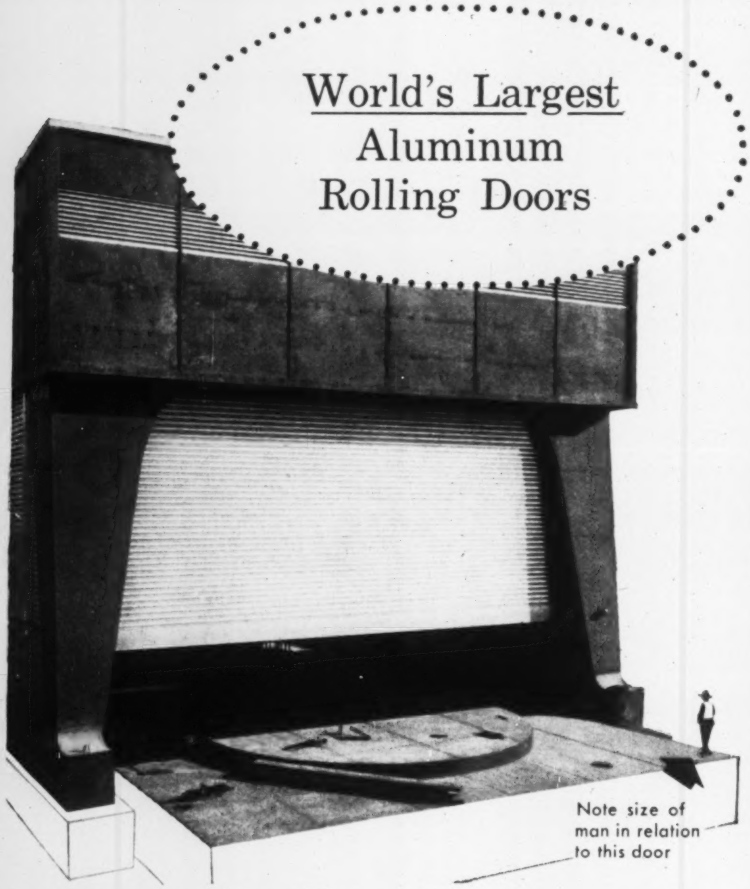
Smoke, steam, acids, and alkalis have no deteriorating effect on Ruberoid Corrugated Asbestos. It doesn't rust or corrode, yet never needs a preservative coating. Completely inorganic, this rocklike material has no appeal for insects, vermin, or rodents. It is suitable for all climates.

Ruberoid Corrugated Asbestos cuts construction costs because building design and specs can provide for lighter footings and foundations, and skeleton framing without sheathing. It doesn't rattle. Once installed no maintenance is needed.

Ask for specifications and feature facts. Write The RUBEROID Co., Industrial Products Division, 500 Fifth Avenue, New York 36, New York.

The RUBEROID Co.®

ASPHALT AND ASBESTOS BUILDING MATERIALS



Another unusual installation of

KINNEAR Rolling Doors

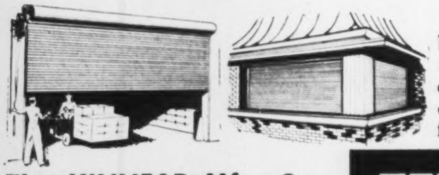
In 60 years of making metal rolling doors for industrial and commercial openings of every kind, we believe these are the largest ever made of aluminum.

Two doors 48 ft. wide and 39 ft. high enclose opposite ends of this 300-ton traveling gantry crane at the Robert H. Saunders — St. Lawrence generating station of the Hydro Electric Power Commission of Ontario. Similar Kinnear doors are used in New York's Robert H. Moses Power Plant, also part of the St. Lawrence project.

The doors are opened electrically as the crane is positioned over one of several open hatches in the generating station . . . then closed to permit working inside in any weather.

The space-saving efficiency and all-metal protection of Kinnear Rolling Doors cut costs in all kinds of openings — from counter-top areas to large industrial service doorways, as shown in the sketches below.

Every Kinnear Rolling Door is also REGISTERED — full details and drawings are kept in Kinnear's own fireproof vaults. *Your Kinnear doors are never obsolete, even if they serve for half a century or more — as many Kinnear doors have.*



Kinnear Rolling Doors are built any size, of steel, aluminum or other metals. Motor operation, with push-button control, if desired. Write for full details.

The KINNEAR Mfg. Co.
FACTORIES:
1820-40 Fields Avenue, Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in All Principal Cities

KINNEAR
ROLLING DOORS
Saving Ways in Doorways

coated and wrapped steel pipe, and C, coal-tar-enamel-lined, coated and wrapped steel pipe.

Work includes crossings of a state highway, a stream and three roads; main connections; 27,000 cu yd of road excavation; valves, manholes and other appurtenances.

Class A concrete must attain a minimum compressive strength of 3,000 psi, and Class B is a 1:2½:5 mix.

Cast iron pipe must conform to AWWA specifications C102-53, C106-53 or C108-53.

The bidding included:

Alternate A 42" prestressed concrete steel cylinder pipe

1	Berlanti Constr. Co., Inc., Harrison, N. Y	$951,373
2C	R. C. Vogel, Inc., Buffalo, N. Y.	975,833
16	Schwab Bros. Trucking, Inc., Tonawanda, N.Y.	1,386,025

Alternate B 42" cement mortar lined, coal tar enamel coated and wrapped steel pipe

1	Berlanti Constr. Co., Inc., Harrison	$986,653
2	McLain Constr. Div., Olsker-McLain Industries, Kenmore, N. Y.	1,053,455
8	Schwab Bros. Trucking, Inc., Tonawanda	1,512,025

Alternate C 42" coal-tar enamel lined, coated and tarred steel pipe

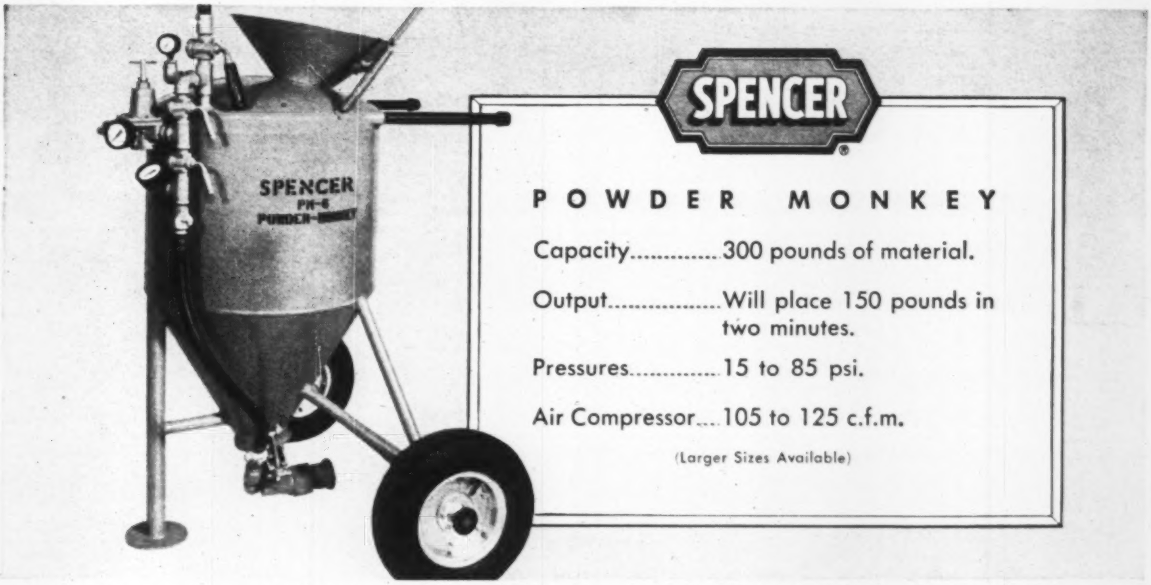
1	Berlanti Constr. Co., Inc., Harrison	$974,053
2	McLain Constr. Div., Olsker-McLain Industries, Kenmore	1,002,803
8	Schwab Bros. Trucking, Inc., Tonawanda	1,512,025

Two contractors submitted incomplete bids.

Bids: 7-9-59 Items	Unit	Quantity	Unit Prices 1	 2C
Steel transmission main pipe, 42", incl ftgs & access, exc, bkfl, furn, haul, lay & test:				
alt. A, prestr conc stl cyl.	lf	25,200	$34 30	$30 00
alt. B, cmt mortar lined, coal tar enam ctd & wrapped	lf	25,200	35 70	nb
alt, C, coal tar enam lined, ctd & wrapped	lf	25,200	35 20	nb
Blowoff pipe, incl exc, bkfl, furn, haul & lay,				
CIP 8", discharge	lf	100	6 00	10 00
12", riser	lf	120	7 00	15 00
Conn to existing work, incl xings & spec constr, furn, haul & place matl for:				
Lake Shore Rd conn to exist 12" water main	ls	job	1,300	1,300
to 42" transmission main	ls	job	750 00	500 00
Eighteen mile Crk Rd. conn to exist vlv vault	ls	job	650 00	2,500
NY State Rt. 5 xing	ls	job	10,000	17,500
stream xing	ls	job	2,000	1,000
xing beneath road	ls	job	4,000	5,950
	ls	job	6,000	9,450
	ls	job	4,000	9,450
Gate vlv & vault, pipe & appurtenances f,h,p,c	ea	1	6,500	7,582
manhole, access f,h,p,c	ea	5	400 00	400 00
air relief f,h,p,c	ea	10	500 00	450 00
comb air relief & pietometer f,h,p,c	ea	1	600 00	525 00
Blowoff assemblies f,h,p,c	ea	11	600 00	500 00
Conc vlv & vault, 30", pipe & appurtenances f,h,p,c	ea	1	14,000	15,026
Excavation, rock	cy	27,000	0 01	4 00
added	cy	500	2 00	2 00
Concrete masonry, class A	cy	20	55 00	50 00
class B	cy	100	33 00	40 00
Stl reinf, add or omit	lb	2,000	0 22	0 15
Brick or conc masonry, add or omit	cy	5	55 00	60 00
Exc, line cutting & repl pavement & special surf,				
asph conc pavement	sy	150	$5 25	$5 00
concrete pavement	sy	50	8 00	15 00
Fndns, bkfl & other purposes, furnish & place,				
select earth fill	cy	100	2 00	3 00
gravel	cy	3,000	3 00	3 25
lean conc mix 1:10	cy	200	15 00	16 00
1:15	cy	100	15 00	16 00
Lumber in foundations	fbm	3,000	200 00	100 00
Sheeting left in place	fbm	30,000	10 00	100 00

f,h,p,c Furnish, haul, place materials & construct
Completion schedule: 270 cal days

(*Unit Prices continued page 124*)



SPENCER

POWDER MONKEY

Capacity..............300 pounds of material.
Output..................Will place 150 pounds in two minutes.
Pressures.............15 to 85 psi.
Air Compressor....105 to 125 c.f.m.

(Larger Sizes Available)

One man is all it takes to fill horizontal holes with Spencer N-IV Ammonium Nitrate and fuel oil, when you use the new Spencer Powder Monkey. Available with wheels for towing, or mount on powder truck.

Now! A Fast, Easy Way To Fill Horizontal Holes With Ammonium Nitrate-Fuel Oil Mixtures:

New Spencer Powder Monkey saves you $3.00 to $4.00 per 100 pounds on bag costs alone!

Scientifically designed for placement of Spencer N-IV Ammonium Nitrate-fuel oil mixtures in horizontal blast holes, the Spencer Powder Monkey extrudes the mixture into the hole. Then the Powder Monkey is filled with sand, which is blown into the holes for stemming.

There's no need for tamping bags, tamping equipment, or the labor needed to fill and tamp bags into the hole!

With the Spencer Powder Monkey, you can actually load faster and more economically than with any other known method! Job-tested on holes ranging from 1⅝ inches to 8 inches in diameter, the Powder Monkey has proved itself under a wide variety of conditions.

Another advantage of placing Spencer N-IV and fuel oil with the Powder Monkey is that you can prime the entire charge with detonating cord at the same time you insert the hose in the blast hole for filling.

World's Most Efficient Low-Cost Blasting Method

Spencer N-IV Ammonium Nitrate, combined with fuel oil and fired with detonating cord, produces a superior blast for these two reasons: (1) Spencer N-IV has a special structure that lets the prills absorb oil more easily. (2) Spencer N-IV contains a higher percentage of ammonium nitrate than other brands.

Because of these two advantages, Spencer N-IV as an ingredient in blasting agents produces more energy than competitive grades of ammonium nitrate, yet costs no more!

With Spencer N-IV and fuel oil you save on priming costs, too, because this mixture can be initiated with a single strand of 175-grain detonating cord. And you put an end to the danger of storing high explosives on the job site because Spencer N-IV by itself is not an explosive!

Spencer N-IV is available in all-plastic 50-lb. bags that are tougher than paper—so tough they reduce breakage as much as 50%. And you can store them right out in the open. (Also available in paper bags.)

For complete information, mail the coupon below:

SPENCER

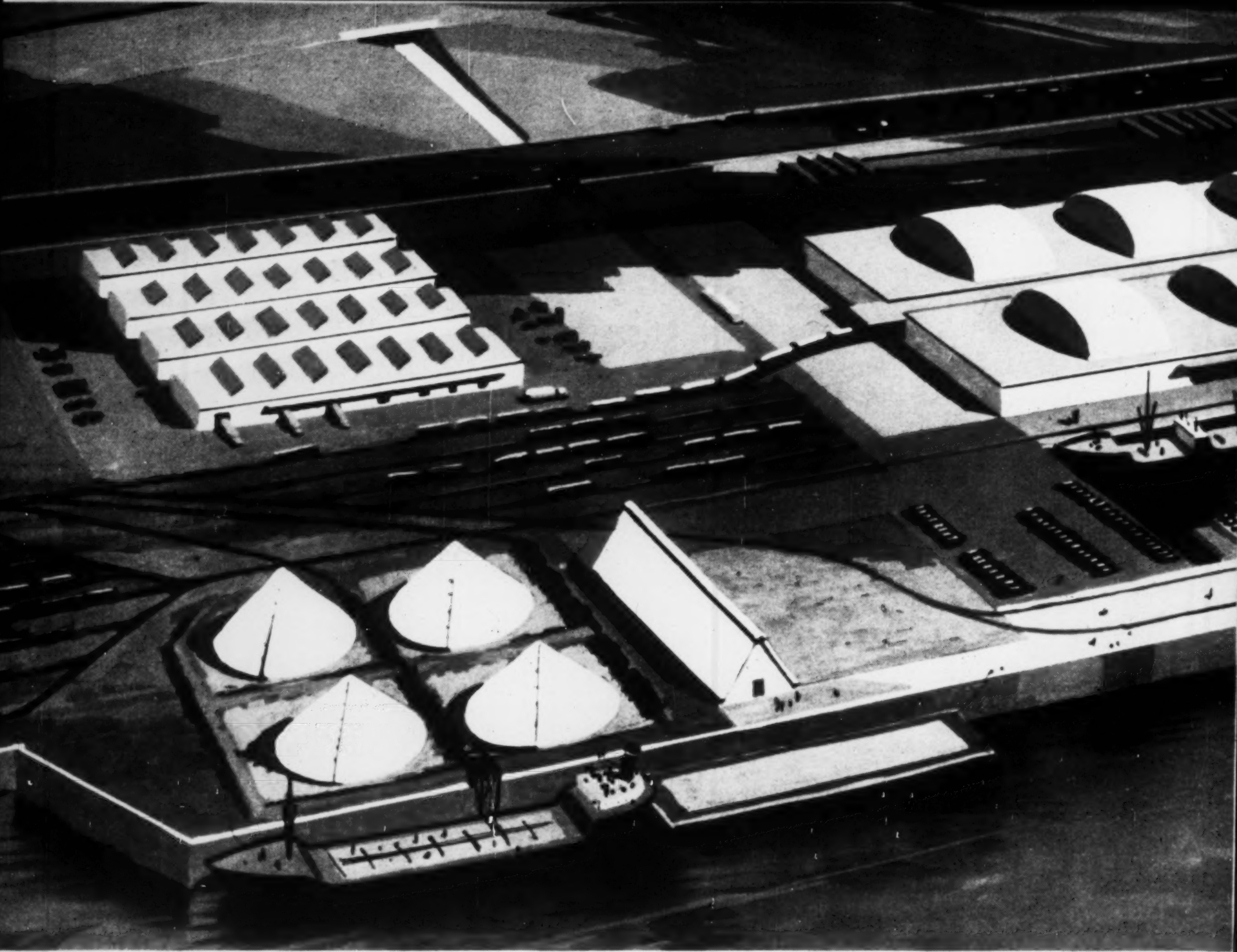
Spencer Chemical Company
407 Dwight Building
Kansas City 5, Missouri

Yes! I want to know more about:
☐ Spencer Powder Monkey
☐ Spencer N-IV Ammonium Nitrate as a blasting ingredient.

Name ______________________
Firm ______________________
Address ______________________
City ______________ State ______

CIRCLE 121 READER SERVICE CARD

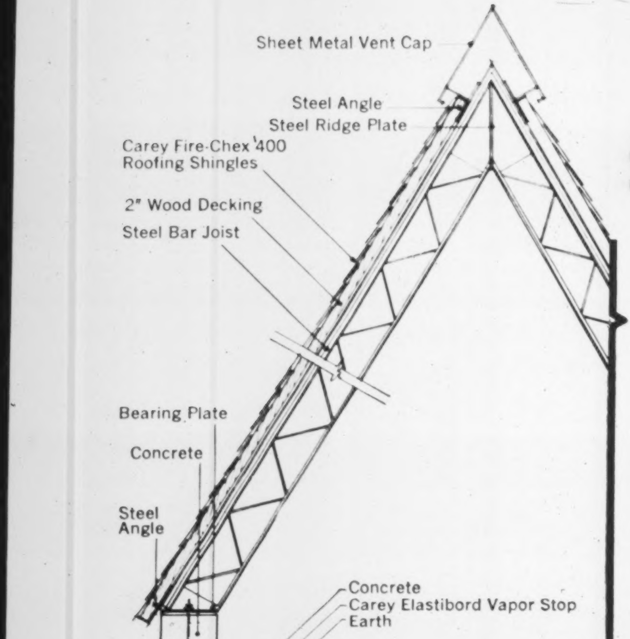
CIRCLE 122 READER SERVICE CARD→



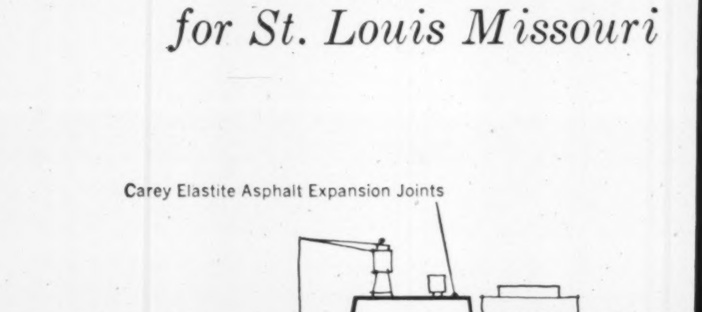
Smith & Entzeroth, a.i.a.
plan an

inland port facility

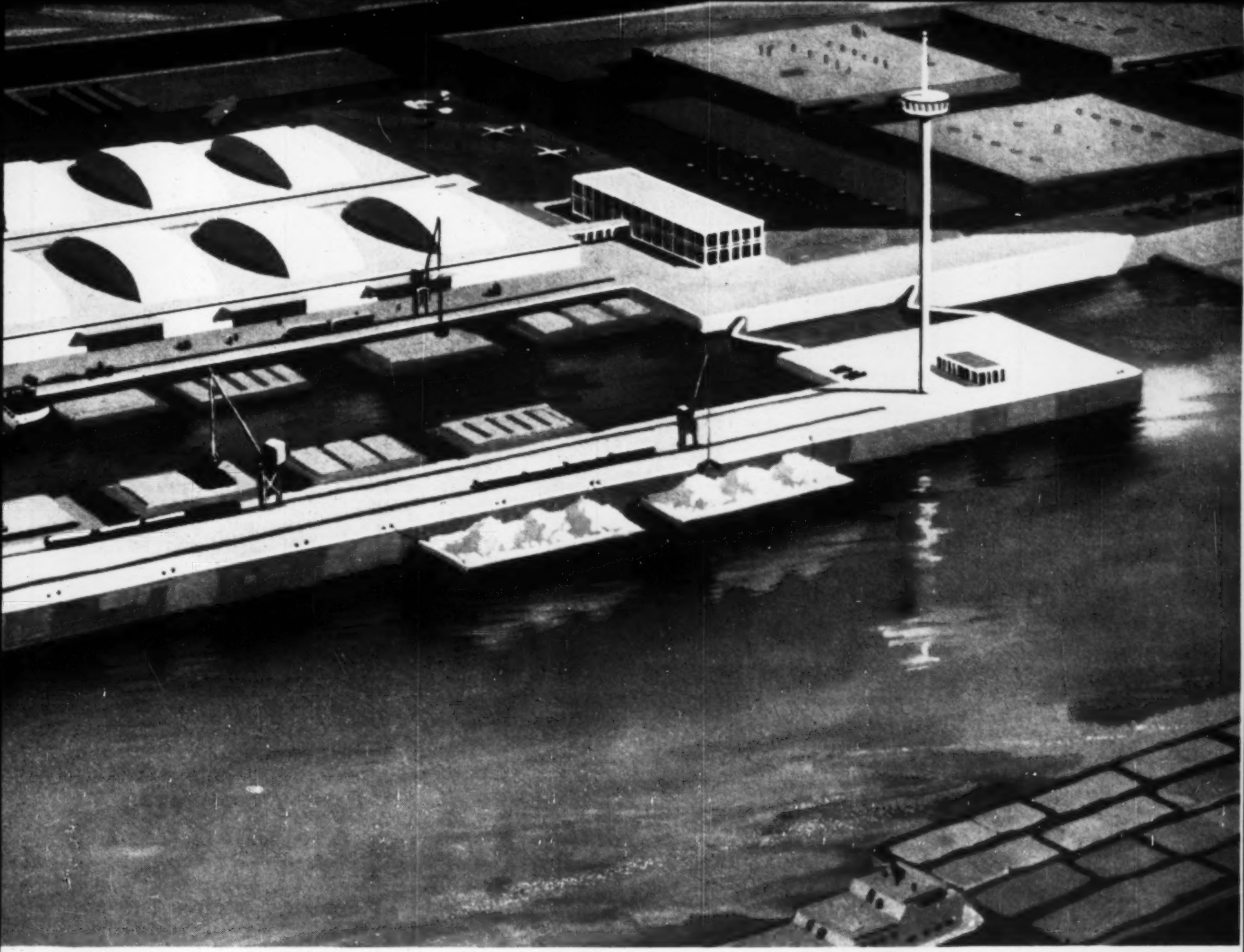
for St. Louis Missouri


Sheet Metal Vent Cap
Steel Angle
Steel Ridge Plate
Carey Fire-Chex 400 Roofing Shingles
2" Wood Decking
Steel Bar Joist
Bearing Plate
Concrete
Steel Angle
Concrete
Carey Elastibord Vapor Stop
Earth

BULK STORAGE ROOF SECTION


Carey Elastite Asphalt Expansion Joints
RIVER LEVEL VARIES 40 FT.

CONSTANT LEVEL BARGE BASIN



The growing importance of the mid-continent as a center of manufacturing and distribution has focused national attention on the need for integrated transportation facilities for domestic and international commerce.

In recognition of this expanding need Carey commissioned the architectural firm of Smith & Entzeroth, St. Louis, Missouri, to design a prototype installation combining air, rail, truck and waterway transportation and including all transfer and storage accommodations.

After considerable research Messrs. Smith & Entzeroth selected a new industrial site on the Mississippi River, north of the city of St. Louis and adjacent to St. Louis County's new circumferential truck route. At this point barge lines, railroads and highway carriers could efficiently unload, load and transfer every type of cargo to or from any destination in the mid-continent. Via the inland waterway and the Port of New Orleans exporters and importers can reach markets all over the world quickly and conveniently.

To handle expanding air-freight traffic a cargo port is located nearby so that all shipping can be coordinated with surface carriers.

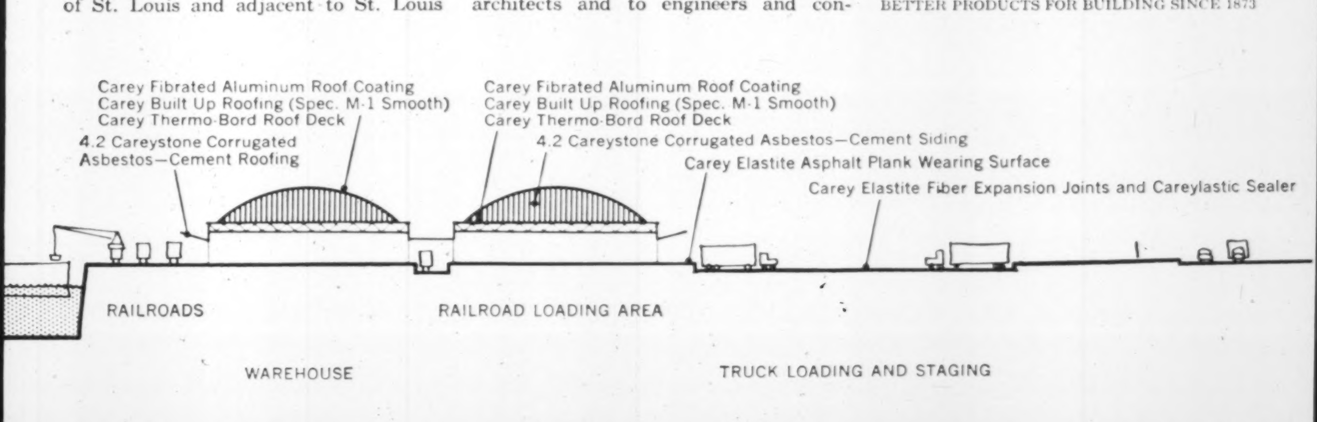
In the development of this project a number of Carey Building Products were used in ways that may be interesting to other architects and to engineers and contractors. Detail sheets and brief specifications on these uses have been prepared by the architects and are available from your Carey representative.

Or, you may prefer to write The Philip Carey Mfg. Company, Lockland, Cincinnati 15, Ohio. Dept. ENR-959.

An
Inland
Port

Carey®

BETTER PRODUCTS FOR BUILDING SINCE 1873


Carey Fibrated Aluminum Roof Coating
Carey Built Up Roofing (Spec. M-1 Smooth)
Carey Thermo-Bord Roof Deck
4.2 Careystone Corrugated
Asbestos—Cement Roofing
Carey Fibrated Aluminum Roof Coating
Carey Built Up Roofing (Spec. M-1 Smooth)
Carey Thermo-Bord Roof Deck
4.2 Careystone Corrugated Asbestos—Cement Siding
Carey Elastite Asphalt Plank Wearing Surface
Carey Elastite Fiber Expansion Joints and Careylastic Sealer
RAILROADS
RAILROAD LOADING AREA
WAREHOUSE
TRUCK LOADING AND STAGING

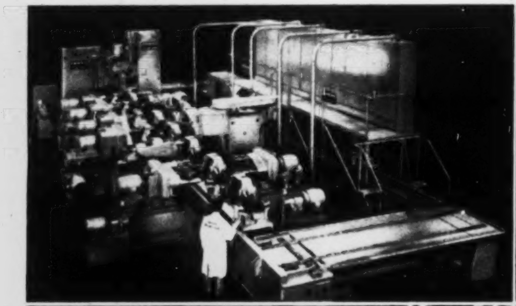
Complicated Concrete Forms Eliminated by WELD-CRETE®

-the amazing liquid bonding agent!

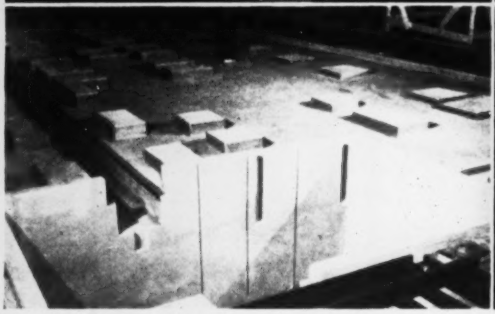
Produces substantial savings for Eaton Manufacturing Company

The Problem: To install two 75-ton 25′ x 67′ milling and drilling machines on concrete floor of Cleveland plant. Machine had to rest on piers rather than floor itself, and forms required for single pour of these mounts were extremely expensive.

Weld-Crete the Answer: Weld-Crete was brushed on 36″ thick base floor at spots where 80 piers were to be located. With the simplest of forms, these 8″ thick piers were later poured with assurance of a permanent bond to the base. The $650,000 machines have operated on these mounts for over three years.



75-ton machine mounted upon 80 concrete piers permanently bonded by Weld-Crete to concrete floor base.



Shows some of 80 piers bonded to concrete base by Weld-Crete. Simple bonding replaced complicated forming, resulted in appreciable savings in installation of 75-ton machines shown above.

Whether you're installing new equipment, moving old, or repairing floors . . . Weld-Crete enables you to *permanently* bond new concrete *directly* to old . . . or *any* sound surface. No costly, time-taking chipping, drilling, roughening, acid washing or scarifying of concrete base. When used with quick setting cement topping, you can lay new floors, ramps, driveways, etc., and run heavy truck traffic over them the next day. The insurance of a permanent bond with Weld-Crete costs as little as 4c per square foot! Get fact-packed literature about Weld-Crete from your Weld-Crete dealer, see Sweet's File, or write us direct.

The use of Weld-Crete is protected by U. S. Patent 2,760,885

LARSEN PRODUCTS CORPORATION
Box 5756I Bethesda, Md.

For Bonding Plaster to any surface . . . ask for Plaster-Weld®

CIRCLE 124 READER SERVICE CARD

Excavation Price Swings Road and Bridges Contract

A bid of 35 cents for 418,000 cu yd of roadway excavation gave WesJulian, Dedham, Mass., the fractional advantage needed to take this road and bridges job in Chelmsford, Mass. The award, at $1,579,551 by the Massachusetts Department of Public Works, was 6% under the engineer's estimate and almost 13% under the high of 13 bidders. Edward J. McCarthy, Boston, is chief engineer of the department.

This 9,681-ft, non-access roadway section of Interstate Route 495, will have two three-lane, 38-ft roadways, with two 10-ft bituminous macadam shoulders, and three bridges to carry crossroad relocations over the new expressway. The first bridge is a five-span continuous steel stringer, the second is a five-simple span bridge of three built up interior girder spans and two stringer end spans, and the third is a two-span continuous steel stringer bridge.

Work includes excavation, grading, gravel foundation, crushed stone base course, Class I bituminous concrete pavement, bituminous macadam surfacing, masonry, drainage, bituminous concrete berms, granite curb and edging, highway guard, fences, stone dust walks, removal of 23 buildings, water system changes, signs, and related work.

All 13 bidders selected quarry stone for the special slope paving under the bridges, in place of alternate granite-faced precast concrete block, and granite edging in place of granite-faced precast concrete edging. On 5,060 lin ft of 12- to 24-in. pipe, contractors picked cement concrete pipe over the vitrified clay alternate. Seven bidders preferred asphalt coated corrugated metal pipe for the subdrains. The other six, including the successful bidder, priced the porous wall concrete pipe alternate.

The contractor must keep three existing roads and a temporary road open to traffic until the relocated roads can be used, then remove their surface and grade the area to conform to the new highway. He must also provide curbs, barriers, fences and lights to guide traffic to the highway adjacent to the work under construction.

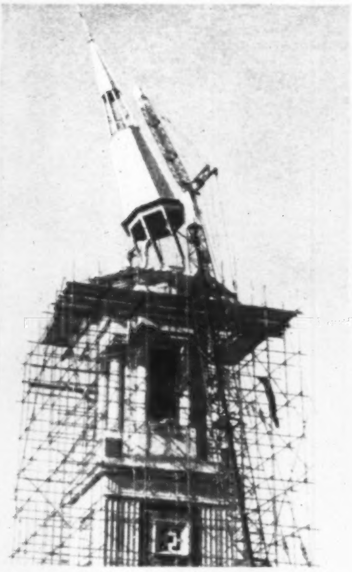
Minimum wages include: carpenter $3.45; crane, tractor & power shovel operator $3.875; maintenance engineer $3.50; common laborer $2.55, all including 10 cents health and welfare fund contribution.

The bidding included:

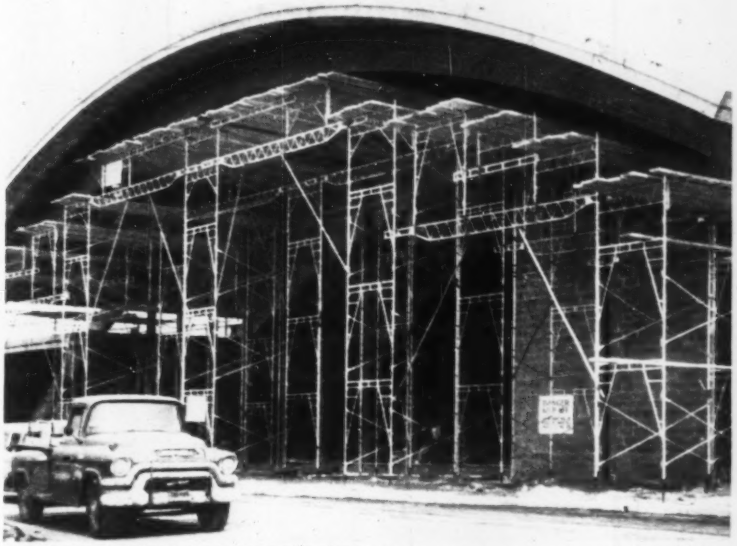
1C	Wes.-Julian Constr. Corp., Dedham, Mass	$1,579,551
2	Bayer & Mingolla Constr. Co., Inc., Millburn, Mass	1,582,713
13	S. Rotondy & Sons, Inc., Melrose, Mass	1,811,225
EE	Edw. J. McCarthy, chief engr, Mass. Dept. of Public Works, Boston,	1,681,801

(Continued on page 126)

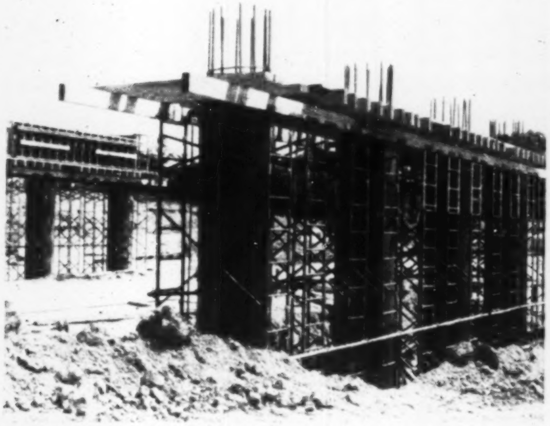
Scaffolding Methods . . . by Patent Scaffolding Co.



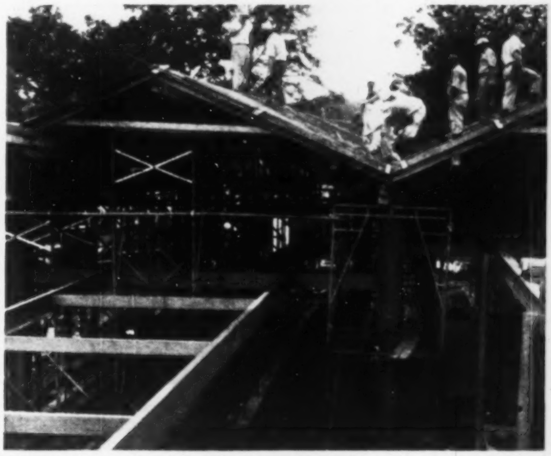
STEEPLE WORK PLATFORMS— Workmen for J. P. Roberts & Sons, contractor, guide into place a new steeple on this church. Wide, stable platforms made of "TubeLox"® Steel Scaffolding are built up rapidly.



PERFECT ACCESS FOR PLASTERERS— To give plasterers the right working heights at the underside of the curved, cantilevered roof of the Penn Fruit Building, Bergen Mall, Paramus, New Jersey, the contractor, Acme Plastering Company, uses "Trouble Saver"® Sectional Steel Scaffolding. First, frames are erected in towers. Then, they are joined by trusses which lock the units together and also make wide platform areas.



HEAVY PIER SUPPORT— On the North-South Ohio Turnpike, joint venturers, Kiewit-Condon-Cunningham, provide support for the formwork for these bridge piers by using "Trouble Saver" Shoring made from 2'-wide ladder frames erected to 26'-high towers spaced 5' apart. Built-in ladders provide easy access for forming work. 20" adjustable legs permit exact height adjustment.



SHORING A FOLDED PLATE ROOF— To make sure that the angle joints of this folded plate roof system do not move when the concrete, 4" to 6" thick, is poured, the contractor, Brick and Concrete Construction Co., uses "Trouble Saver" Sectional Steel Shoring placed to support the impact load on each adjoining folded plate section. New Charter Road School, Acton, Mass.

IDEA FILE
SCAFFOLDING
SHORING METHODS

New "Idea File On Efficient Scaffolding and Shoring Methods" now available. Contains over 200 photos and job details on unusual and routine construction, renovation and repair projects. *Write for your copy.*

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

GOLD MEDAL LADDERS SCAFFOLDING

THE PATENT SCAFFOLDING CO., Inc.

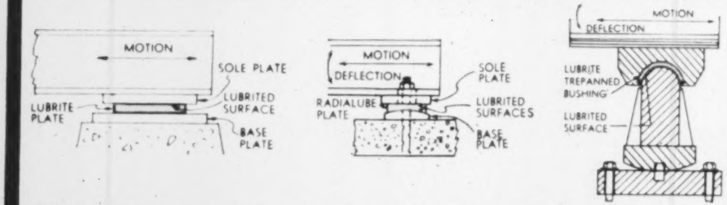
38-21 12th Street, Dept. ENR, Long Island City 1, N. Y.
1550 Dayton Street, Chicago 22, Illinois • West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.
In Canada: 355 Dufferin St., Toronto • *Branches in all Principal Cities*

SELF LUBRICATING SECURITY FOR CONNECTICUT TURNPIKE IS ASSURED

WITH Lubrite®

EXPANSION PLATES

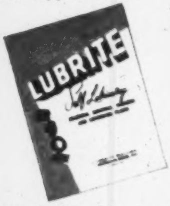
3 BASIC LUBRITE ASSEMBLIES FROM MANY AVAILABLE



Lubrite offers positive assurance of self lubricating security in all installations where expansion, contraction and/or rotation are factors.

SEND FOR THIS IMPORTANT AND VALUABLE LITERATURE—

Manual No. 55 contains complete information, technical data and specifications about Lubrite Expansion Plates and Bushings for bridges, buildings, refineries, atomic energy and chemical processing equipment applications.



Manual No. 56 covers Lubrite bushings, bearings and washers for use in machinery, industrial equipment, hydroelectric projects, missile and atomic energy applications and high temperature applications.

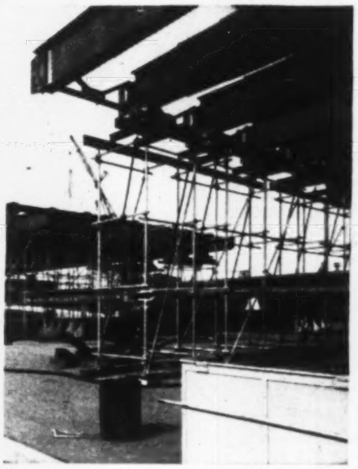
LUBRITE DIVISION
MERRIMAN BROS., INC.
191 Amory Street, Boston 30, Mass.

. . . Road & Bridges

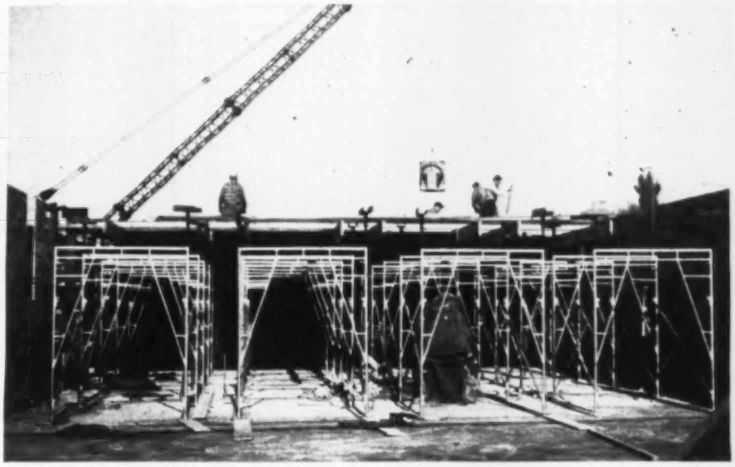
Bids: 6-23-59	Unit	Quan-	Unit Prices	
Items		tity	1C	2
Clear & grub	ac	76	$400.00	$400.00
Excavation, rdwy earth	cy	418,000	0.35	0.42
rock, class A	cy	34,300	3.00	2.20
peat	cy	27,800	0.25	0.30
Loam, excavated & stacked	cy	5,200	0.25	0.25
Excavation, bridge	cy	1,615	1.60	2.20
trench, class A	cy	8,300	2.00	1.80
class B	cy	660	4.00	4.50
rock, class B	cy	3,000	4.00	7.00
CB or MH abandoned	ea	4	25.00	25.00
removed	ea	3	50.00	40.00
Borrow, ordinary	cy	54,500	0.25	0.42
gravel	cy	83,500	0.75	0.75
sand	cy	2,200	3.00	3.00
Fine grg & rollg, paved areas	sy	141,000	0.10	0.08
Grade & finish, other than in paved areas	lf	18,100	0.50	1.00
Crushed stone for base crse	t	34,800	2.75	2.95
bridge fndns	t	10	5.00	10.00
Bitumen, rdwy base crse	gal	216,000	0.12	0.12
Calc chlor, rdwy dust contrl	lb	63,000	0.05	0.04
Bitumen, surface treatment	gal	3,500	0.13	0.30
Cr stone, macadam surfng	t	3,500	2.75	3.15
Bit, macadam surfacing	gal	59,200	0.12	0.13
conc, cl I, pavmt, tp 1-1	t	19,800	6.00	6.50
berms, tp A	t	300	12.00	13.00
tp B-4	t	150	12.00	13.00
Gran rubble block pavmt	sy	240	10.00	12.00
Lumber sheeting	Mfbm	4	100.00	500.00
Cmt conc masonry cl A	cy	555	60.00	50.00
cl B	cy	1,570	40.00	33.00
cl C	cy	42	40.00	30.00
Steel reinf, struct	lb	107,000	0.12	0.135
Cmt conc masonry, cl G	cy	50	30.00	25.00
Bituminous dampproofing	sy	1,080	0.60	0.60
Fld stn masnry in cmt mrtr	cy	190	50.00	35.00
Spec slope paving, quarry stn or gran faced prcst conc blocks	sy	720	8.00	8.50
Channel paving	cy	280	15.00	12.00
Stn masnry walls, remov & rebuild in cmt mortar	cy	10	50.00	75.00
Conc piles, cast in place	lf	1,450	7.00	5.00
Catch basin	ea	76	160.00	160.00
Manhole	ea	35	160.00	160.00
Drop inlet, type C	ea	57	175.00	160.00
Reinf conc pipe, 12"	lf	5,400	3.50	3.00
15"	lf	580	4.00	3.50
18"	lf	160	5.00	4.50
class V	lf	160	5.50	5.00
24"	lf	700	7.00	6.00
30"	lf	380	9.00	8.00
36"	lf	400	12.00	11.00
42"	lf	400	16.00	13.00
72"	lf	380	40.00	37.00
class V	lf	220	50.00	45.00
Asph ctd CMP, 12"	lf	470	4.00	3.80
24"	lf	40	9.00	7.80
Cement concrete pipe, 12"	lf	1,860	3.00	2.40
15"	lf	1,240	3.75	3.00
18"	lf	1,160	5.00	4.00
24"	lf	800	6.50	5.50
Subdrn w 6" perf ACCM P	lf	4,940	nb	3.50
alt. por wall conc pipe	lf	4,940	4.00	nb
Grtd cob stn paving, wtrwys	sy	1,670	5.00	4.80
Posts, individual, square	ea	50	9.00	10.00
Highway guard, type C3S	lf	11,500	1.85	1.95
anchors	ea	58	43.00	50.00
Stl bm hwy guard, type SS	lf	390	2.80	3.00
Hwy guards, rem & stkd	lf	340	0.25	0.25
Anchors, removed & stkd	ea	3	5.00	10.00
Fence, stock	lf	11,400	0.45	0.50
chain link, 60"	lf	5,200	2.90	2.95
barrier	lf	140	8.50	9.00
portable	ea	4	80.00	100.00
Gran curb, tp VA 3, stragt	lf	630	3.00	3.30
tp VA 4, stragt	lf	1,700	3.00	3.10
curved	lf	210	4.50	5.50
corners, type A	ea	14	15.00	16.00
inlets, straight	ea	54	30.00	30.00
Edging, tp B granite stragt	lf	14,200	1.40	1.50
radius 10' or less	lf	120	5.00	3.40
alt. tp B gran fced prcst conc straight	lf	14,200	1.40	1.50
curved	lf	120	5.00	3.40
Curb, remove & stack	lf	230	0.80	1.00
inlets, remove & stack	ea	3	5.00	10.00
Stone dust walks	t	24	4.00	10.00
Conduit, traffic signal	lf	630	2.00	1.40
Bounds, lettrd granite f&s	ea	37	26.00	25.00
plain granite f&s	ea	22	25.00	24.00
Project markers f&s	ea	1	10.00	15.00
Bridge structure	ls	job	160,000	165,000
	ls	job	175,000	178,500
	ls	job	80,000	73,000
Gr slab steps, rem & rebld	ls	job	500.00	300.00
Rdside guide sign, interstate	sf	900	13.00	13.00
secondary roads	sf	90	9.00	6.00
Signs, other than guide, 6' square & over	sf	340	9.00	14.00
under 6' square	sf	100	7.00	9.00
Reflect dilineator, dmtble	ea	160	6.00	5.00
Warning cluster, 24" (W-19)	ea	9	32.00	26.00
Traffic sgn, remove & stk	ea	11	5.00	5.00
Street sign, remov & reset	ea	2	8.00	10.00
Portable office building	ea	3	3,000	2,500
sanitary building	ea	1	4,000	4,000
Loam, rehandle & spread	cy	3,400	1.00	1.30
Borrow, peat	cy	6,800	1.00	1.00
modified	cy	13,400	2.30	1.50

(Continued on page 128)

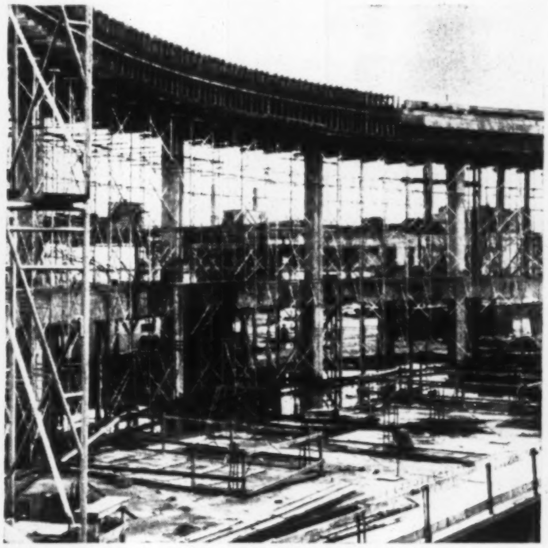
Shoring Methods . . . by Patent Scaffolding Co.



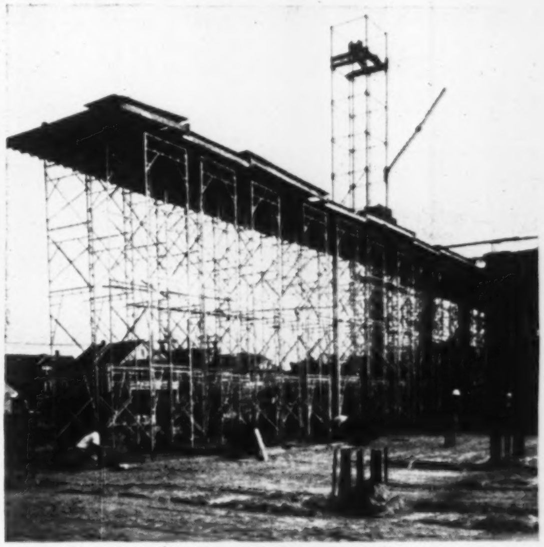
CUTS COSTS 20%—"TubeLox"® Steel Shoring "towers" permit setting several dozen steel girders a day on overpass in downtown St. Louis. Instead of setting and riveting one girder at a time, thereby making iron workers dependent upon movement of cranes, St. Louis Steel Erection Co. keeps workers on the job, eliminates lost motion, and cuts working days by 20%.



NEAT, QUICK ROOF SLAB SHORING—Simple, easy-to-erect frames of "Trouble Saver"® Sectional Steel Shoring are rapidly set in place to support the formwork for the slab roof of the new Southwood Acres School, Thompsonville, Conn. Only 700 6'6"-high frames are required. Spaced 7' apart with 3' to 4' spacing between rows, these "Trouble Saver" Shoring frames adequately support all the load encountered. Notice how the free standing sections are neatly arranged ready for the placement of forming lumber. U-heads placed in the tops of the scaffolding frames are designed to hold the wood stringers. 20" adjustable leg attachments provide the precision shoring height required. Detailed layouts, supplied by PS Co., make assembly on the job site quick and easy. John Romano Contractors, general contractor.



SUPPORTS 3165 LBS. PER FOOT—Here, "Trouble Saver" Sectional Steel Shoring components are shown arranged to support a 242' diameter concrete beam, 47' above ground. Beam is 5'8" wide, with irregular depth to 4'6". While the height to which this shoring is erected is interesting, the major importance is the fact that it is assembled to carry a load of 3165 lbs. per lineal foot of beam. Utica (NY) Memorial Auditorium. Sovereign Construction Co., Ltd., general contractor.



SLIDING SYSTEM FOR MINIMUM EQUIPMENT—To gain the substantial cost advantages of minimum equipment, Frank Briscoe Co., Inc., here uses sectionalized set-ups of "Trouble Saver" Shoring which can be slid from pour to pour for the 8" floor slab of the new 250' by 275' Western Electric Co. Bldg. Boston. 22' x 125' shoring sections, with forms and dropheads in place, are slid forward between columns by cables attached to wood sills. Bulldozer used for power. Photo shows one narrower section just after movement.

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1909-1959
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THE PATENT SCAFFOLDING CO., Inc.

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DAYLIGHTING DO's and DON'Ts

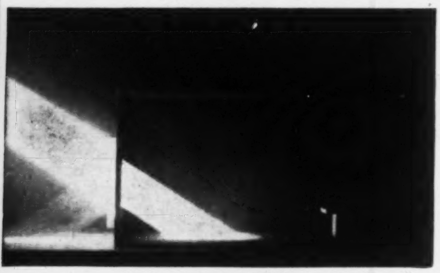
FOR PROGRESSIVE ENGINEERS

* No. 1 of a series to help Engineers increase plant efficiency and economy.

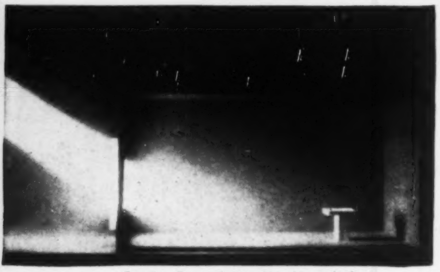
DON'T expect maximum daylighting value from just any glazing medium

In good industrial daylighting practice, the problem is to provide enough light at working levels distant from the windows while avoiding a high concentration of lighting next to windows. To accomplish this uniformity of lighting, some diffusion must be employed to throw a portion of the available light directly to the far side of the room.

Translucent light diffusing glass by Mississippi is "Visioneered" for better daylighting, scientifically designed to distribute light to best advantage. Furnished wired and unwired in a variety of industrial patterns and surface finishes, Mississippi rolled glass is available at leading distributors of quality glass.



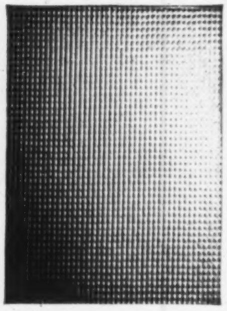
Photograph shows "Smoke Box Room" with its window glazed with clear glass.

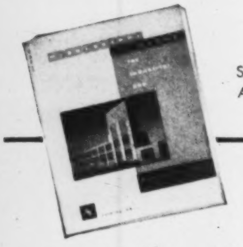


Smoke Box photo showing window glazed with a diffusing glass.

DO INSIST ON GLASS FOR GLAZING

In buildings new or old, glass and glass alone possesses the desirable characteristics of chemical stability, permanence of finish, color, shape, surface hardness and non-inflammability. Buy, specify, insist on glass. See your Mississippi Glass distributor.





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WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

. . . Road & Bridge

Bids: 6-23-59 Items	Unit	Quantity	Unit Prices 1C	2
CI water main, cmt lined, 6"	lf	630	5.00	3.80
8"	lf	1,130	6.00	5.00
mech jt, 6"	lf	400	5.00	4.20
8"	lf	150	6.00	5.50
ftgs for water main	lb	700	0.35	0.32
Hydrant, remove & reset	ea	3	100.00	150.00
Copper tubing, type K, ¾"	lf	280	2.00	2.00
Temporary service line, 8"	lf	760	5.00	4.65
Gate & gate box, 6"	ea	2	125.00	80.00
8"	ea	1	150.00	110.00
adjust	ea	2	25.00	20.00
Service box	ea	11	25.00	10.00
Curb stop	ea	11	25.00	8.50
Corp cock, ¾", w copper gooseneck	ea	10	25.00	7.50
Insulation, 6" water pipe	lf	430	8.00	7.00
8" water pipe	lf	180	10.00	8.00
Remove buildings	ea	23	1.00	1.00

Completion schedule for June 1960.

Tunnels Aid RR Relocation On Feather River Project

Ten bids, with a spread of 30% over the $5,720,320 that placed low, show the competition for the relocation of Western Pacific Railroad tracks around the proposed Oroville Reservoir in Butte County, Calif., which includes two tunnels.

Work is for the Feather River project of the State of California Department of Water Resources, Sacramento. (ENR Oct. 15, '57, p. 222).

The award to low bidders Gordon H. Ball, Gordon H. Ball, Inc., Ball & Simpson, and Gates & Fox Co., Inc., a joint venture, Berkeley, Calif., was 5.6% below the second and almost 24% below the high bid.

The 18-ft-wide, 26-ft-high tunnels will be 940 ft and 2,810 ft long, respectively. Tunnel excavation, 127,000 cu yd at $13.50 per yd, is the largest item in the contract, almost 30% of the total. Other prices on this excavation ranged from a low of $12.25 to a high of $15.50 per cu pd. Concrete for tunnel lining, 32,000 cu yd at $23.35 a yd, accounts for an additional 13% of the total. Other prices on this item ranged from $17.00 to $38.85 cu yd.

Maximum water cement ratio is 0.60. Concrete must attain a compressive strength of 3,000 psi.

Prevailing wages include: blaster, driller, powdermen in heading $3.415; steel form raiser & setter $3.265; mucking machine operator $3.70; concrete crew, including rodding and spreading, $3.165; miners, tunnel, $3.415.

The bidding on this tunnel job included:

1C	Gordon H. Ball, Gordon H. Ball, Inc., Ball & Simpson, Gates & Fox Co., Inc., Berkeley, Calif	$5,720,320
2	Kemper Constr. Co., MacDonald & Kruse, Macco Corp., Los Angeles	6,063,377
10	Henry J. Kaiser Co., Oakland, Calif	7,496,000

Bids: 7-29-59 Items	Unit	Quantity	Unit Prices 1 C	2
Clear & grub	ac	75	$600.00	$2,660
Water supply, develop	ls	job	100,000	99,983
apply	Mjal	55,000	0.10	2.10
Excavation, roadway	cy	870,000	0.82	0.98
structural	cy	25,000	3.50	5.10
Structural backfill	cy	16,000	5.00	4.75
Exc, ditch & channel	cy	9,100	2.50	3.10
borrow	cy	110,000	1.00	1.30

(Continued on page 130)

HERE'S PROOF...

YOU CUT THE COSTS OF TEMPORARY SHEET PILING BY RENTING "FASTER FROM FOSTER"

FASTER FROM FOSTER

	WHEN YOU BUY PILING	WHEN YOU RENT "FASTER FROM FOSTER"
1. Can you always have the exact length and exact section the job calls for?	NO	YES
2. Can you be sure of "on-time" delivery to the job site, even in emergencies?	?	YES
3. Do you eliminate investment in inventory?	NO	YES
4. Can you avoid hidden costs such as interest, handling, storage, taxes?	NO	YES
5. Can you count on a fixed, predictable low expense directly chargeable to only one job?	NO	YES
6. Do you actually save money?	NO	YES

If you are not planning to rent steel-sheet piling for *all* your jobs we'll be glad to prove the advantages of the Foster Piling Rental Plan, and show you how hundreds of contractors use it for savings and service on jobs all over the country. A call to your nearest Foster office can get you immediate deliveries of all standard piling sections from our nationwide warehouse and field stocks. Our representative will be pleased to present Foster's complete contractor service on H-Bearing Pile, Pipe Pile, Lightweight Piling, Highway Products, Pipe and Rail.

Immediate reference in Sweet's Industrial Construction File, or send for our new 24-page Piling Catalog EP-9A.

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on direct-connected motor powered equipment with high starting torque, the motor must be sized B I G for starting instead of small for running. this makes you buy more motor than you really need or use a wound-rotor type more expensive than you want. a better way is to use the small motor and drive through a National Torque Converter this "tailors" the power to the need, multiplies maximum motor torque up to three times $\begin{array}{r}370\\ \times 3\\ \hline 1110\end{array}$ for starting, boosts torque instantly when overloads occur, bans motor stall and increases equipment life.

National Torque Converters help smaller motors do a bigger job

Heavy, electric-powered equipment operating on an intermittent, on-off-on-off work cycle gives motor drives a mighty tough time—unless it drives through a National Torque Converter. The converter multiplies starting torque so that a standard motor, sized to take care of the equipment's *running* needs, can supply the extra push needed for starting. Added loads imposed by multiple operations are smoothly cushioned. Shocks and strains, so hard on equipment, are absorbed. The extra cost of a special motor, and the extra day-to-day expense of operating an over-sized power plant are both eliminated.

If you are concerned with manufacture or operation of any heavy equipment where electric drives of from 100 to 1000 hp are used, the National line of Torque Converters will provide you with a unit precisely "mated" to load and application. For details write:

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National Torque Converters are manufactured with or without integral cooling systems.

THE NATIONAL SUPPLY COMPANY

Subsidiary of Armco Steel Corporation

TWO GATEWAY CENTER, PITTSBURGH 22, PENNSYLVANIA

. . . Oroville Tunnel

Bids: 6-29-59 Items	Unit	Quan-tity	Unit Prices 1C	 2
Rock embankment, selected	cy	210,000	$0 20	$0 35
Bedding material, selected	cy	2,800	3 00	1 10
Excavation, tunnel	cy	127,000	13 50	12 25
Leveling course	cy	1,200	12 00	23 00
Compact original ground	sy	10,000	0 05	0 25
Riprap	cy	1,500	25 00	5 40
Concrete, structures	cy	2,300	41 00	70 00
tunnel invert	cy	2,500	14 50	24 00
tunnel lining	cy	32,000	23 35	22 00
grt for riprap	cy	250	20 00	34 00
Steel reinforcing bar	lb	3,500,000	0 125	0 13
Perm struct stl supports	lb	2,200,000	0 30	0 25
Rock bolts	lf	23,000	0 75	2 10
Chain link woven wire fab for tunnel roof support	sf	62,000	0 15	0 32
Timber	Mbm	600	200 00	250 00
Cement	bbl	60,000	5 50	5 00
CMP asb bonded & paved invert, 12 ga, 18"φ	lf	60	10 00	9 60
30"φ	lf	60	15 50	16 90
10 ga, 42"φ	lf	90	24 00	26 50
8 ga, 42"φ	lf	70	27 00	33 00
48"φ	lf	80	31 00	37 50
CM multiplate pipe,				
10 ga, 66"φ	lf	170	49 00	35 00
90"φ	lf	230	66 00	69 00
0 ga, 108"φ	lf	100	116 00	125 00
5 ga, 108"φ	lf	160	95 00	105 00
10 ga, 108"φ	lf	210	75 00	90 00
0 ga, 126"φ	lf	210	130 00	145 00
5 ga, 126"φ	lf	370	110 00	127 00
3 ga, 138"φ	lf	70	134 00	138 50
7 ga, 138"φ	lf	120	110 00	117 00
1 ga, 150"φ	lf	70	155 00	164 00
5 ga, 150"φ	lf	120	134 00	138 50
8 ga, 150"φ	lf	200	112 00	125 00
Misc metalwork	lb	5,000	0 48	0.65
Rt of way fence, 5 wire	lf	12,700	0 90	1 10
8 wire	lf	2,800	0 85	1 20
Lighting, grnding & power system, tunnel #2	ls	job	24,000	17,500
tunnel #3	ls	job	24,000	18,790
Aerial elec distr system bet tunnels #2 & #3	ls	job	3,500	3,200
Perf metal pipe, asb bond, 12 gage, 8"φ	lf	44	7 50	6 00

Completion schedule: 600 cal days
Liquidated damages: $300 day

Access Channel Dredged In New Orleans

To provide access for future contracts that will eventually provide a 42x500-ft tidewater channel from New Orleans, on the Mississippi River, to the Gulf of Mexico, dredging of a 9.4-mile, 18x140-ft channel is under contract to Bauer Dredging Co., Inc., Port Lavaca, Tex. The award at $1,621,971 by the Corps of Engineers, New Orleans, is 8.2% under the engineers' estimate.

The front retaining dike will be built to an elevation of 8.0 mean sea level, out of available humus and soft clay. Since this is poor material for dike construction, 40 to 50 days will be consumed in building retaining dikes to hold the dredged material and prevent it from running into bayous and the dredged cut.

Minimum wages include: leverman $2.00; first engineer's assistant $2.00; oiler $1.30; fireman $1.50; machinist $2.00; deck hand $1.20; derrick operator $1.75; welder $1.80; common laborer $1.15.

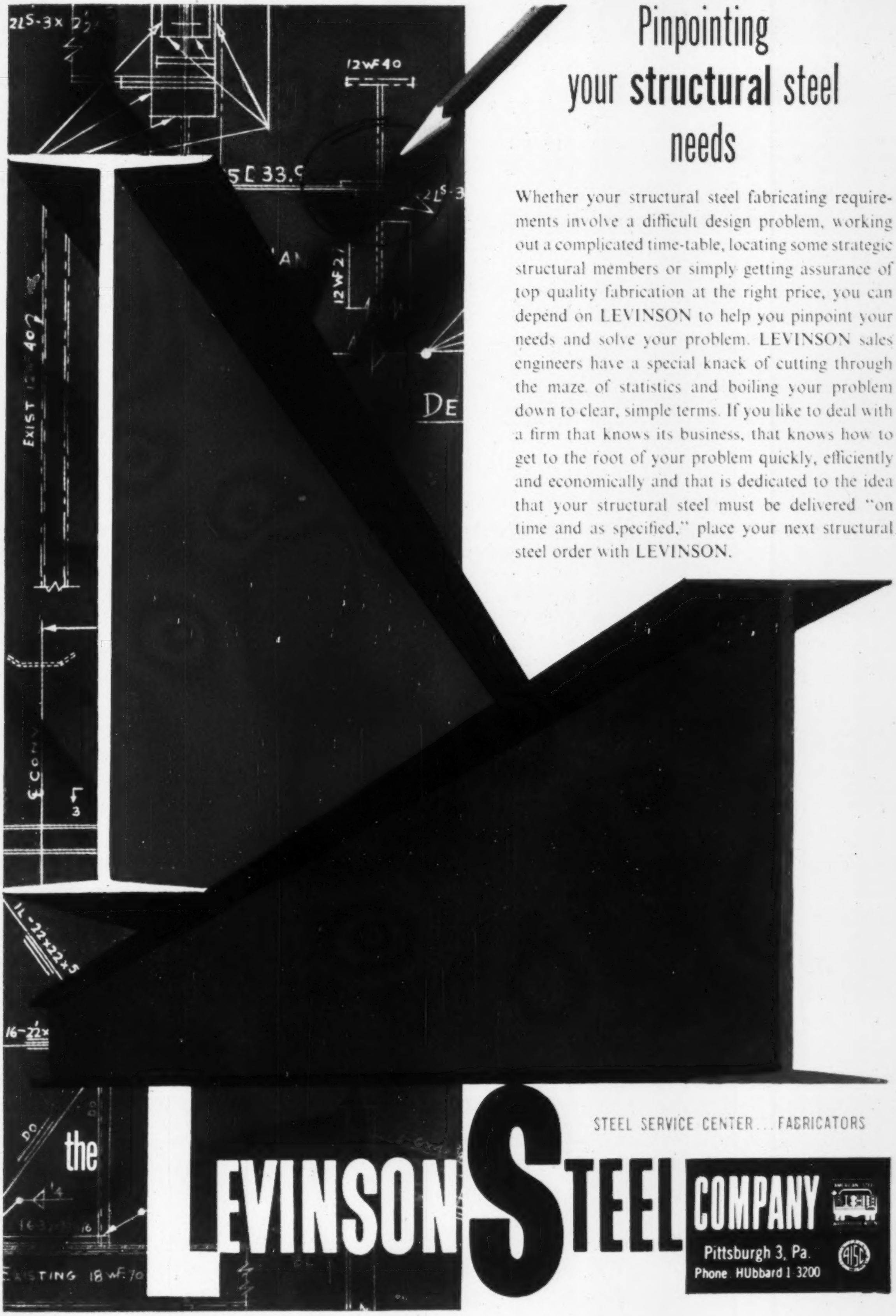
The bidding on this dredging job included:

1C	Bauer Dredging Co., Inc., Port Lavaca	$1,621,971
2	Jancke Service, Inc., New Orleans	1,635,318
6	Standard Dredging Corp., New Orleans	1,816,767
EE*	Corps of Engineers, New Orleans	1,767,587

* Fair & reasonable contract estimate, without profit

Bids: 7-14-59 Items	Unit	Quan-tity	Unit Prices 1C	 2
Dredging	sta (100 lf)	601 22	$2,698	$2,720

Commence: 8-8-59. Complete: 8-21-60
Liquidated damages: 200 day



Pinpointing your **structural** steel needs

Whether your structural steel fabricating requirements involve a difficult design problem, working out a complicated time-table, locating some strategic structural members or simply getting assurance of top quality fabrication at the right price, you can depend on LEVINSON to help you pinpoint your needs and solve your problem. LEVINSON sales engineers have a special knack of cutting through the maze of statistics and boiling your problem down to clear, simple terms. If you like to deal with a firm that knows its business, that knows how to get to the root of your problem quickly, efficiently and economically and that is dedicated to the idea that your structural steel must be delivered "on time and as specified," place your next structural steel order with LEVINSON.

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Contractor on new Ohio Freeway speeds tough project with

GULF MAKES THINGS

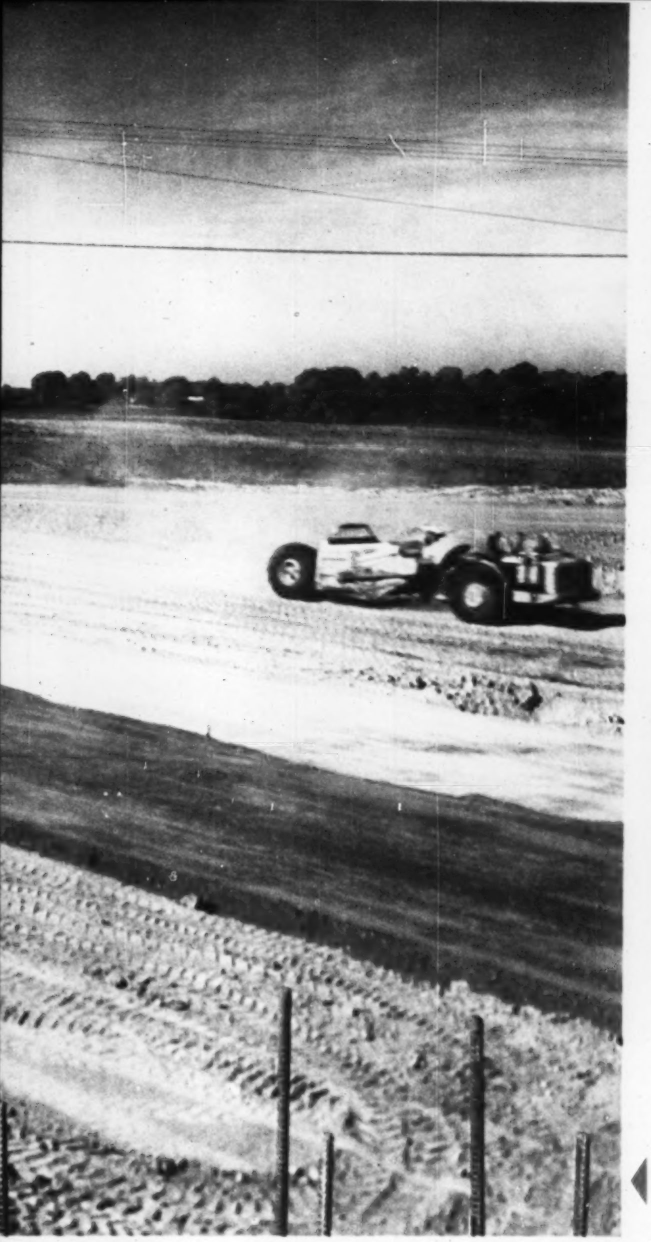
Take it from Bruns Coal Company, highway contractor of Zanesville, Ohio—Gulf makes things run better when the going's tough. Especially for their hard-working graders, scrapers, dozers, trucks.

Their contract calls for clearing, grading, drainage, paving, landscaping and bridge-building—on a 6-mile section of the new Ohio Freeway which will link Cincinnati and Conneaut, Ohio.

They're moving over 2,000,000 cubic yards of earth in the process . . . building two and one-quarter miles of ramps and interchanges . . . pouring over 129,000 square yards of 10″ reinforced concrete pavement.

To keep things rolling, on a tight schedule, Bruns operates all their heavy-duty powered equipment with clean-burning Gulf fuels . . . lubricates them with clean-working Gulf oils and greases . . . and relies on Gulf for on-the-job service and prompt delivery.

Bruns has plenty of proof that Gulf makes things run



On the job servicing with Gulf oils and greases is a regular routine between two 10-hour shifts, six days a week, for Bruns Coal Company on their Ohio Freeway contract.

Gulf man on the job checks fuel and lube requirements with Bruns executives. Left to right: Dennis Garwood, Chief Engineer; Lloyd Bruns, Vice President and Project Superintendent; Carl Bortles, Survey Chief; Frank Shindeldecker, General Superintendent; and William Stranko, Gulf Sales Representative.

◀ Bruns Coal Company is the prime contractor on Project No. 37 of the Conneaut-Cincinnati Thruway. Bruns relies on Gulf fuels and lubricants to keep equipment rolling at top efficiency on this $5,000,000 job.

Gulf fuels, lubricants and service . . .

RUN BETTER!

better. Their engines run clean with maximum power output. Their equipment stays on the job with a minimum of mechanical delays. Maintenance costs are held down. And they're on schedule.

How about your equipment efficiency? See how Gulf makes things run better. Just call a Gulf Sales Representative at the nearest Gulf office. Meanwhile, mail coupon for the latest edition of "Gulf Contractors' Guide"—the maintenance "bible" for heavy equipment.

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Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

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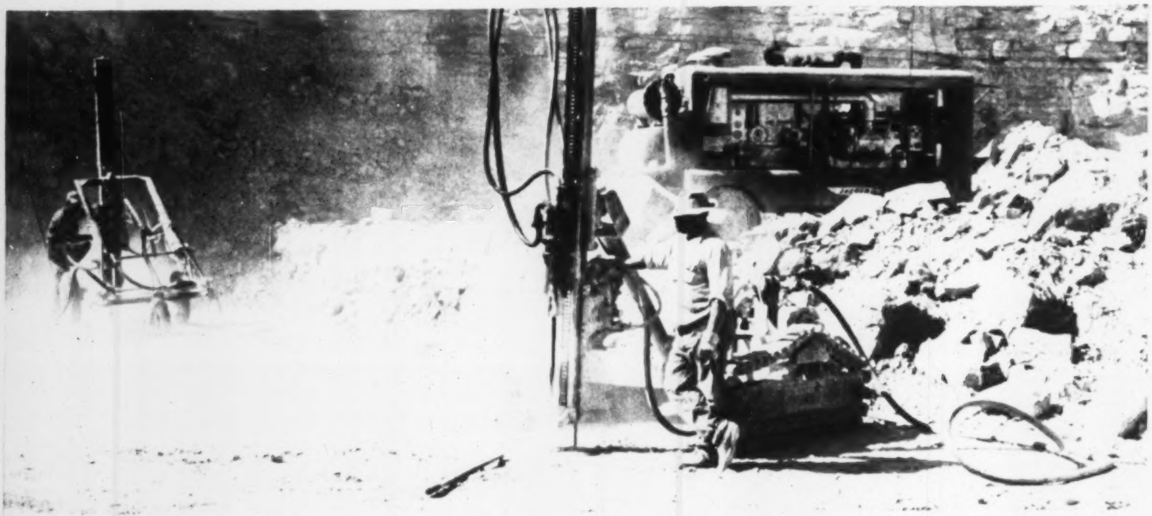


11" PER MINUTE PER DRILL, IN LIMESTONE LEDGE: Constant full pressure produces maximum footage with this Thor self-propelled "Rocket" rig and BW-2 wagon drill. "Our Jaeger '600' rpm's less, and its 100 psi easily operates the two drills without lag," says owner.

UP TO 140 LICKS A MINUTE with Jaeger "600" behind a McKiernan-Terry 9B-3 four-ton double acting hammer. The operation is setting piles and steel for cofferdams on reinforced concrete bridge project.

ON PIPE TUNNELING WORK, auger deflection caused by fluctuating air pressure formerly necessitated 2 to 3 drillings per hole. With the constant pressure of a Jaeger rotary, one drilling is now enough.

"Our air costs less than ever with a Jaeger"

Owners of Jaeger rotary compressors uniformly note their lower cost of operation compared with other makes. In 8 hours' steady operation a Jaeger "600", for example, averages 48,000 fewer revolutions than any of five other compressors which use the same GM 6-71 diesel engine (1700 rpm full load speed compared with 1800 rpm). Output exceeds 500 cu. ft. of air per pound of diesel fuel.

SLOWER SPEED MEANS SAVINGS

Jaeger 85, 125, 250 and 365 cfm models are similarly efficient. The fuel savings are substantial. Because all operation is below the continuous horsepower curve, engine maintenance is at a minimum. In the compressor unit, 8000 hours without replacing a single vane is not at all unusual.

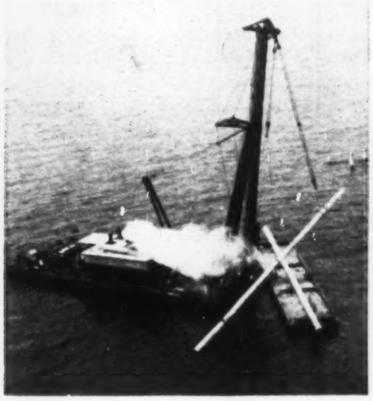
Enjoy this low cost, trouble-free operation on your own work. We will be glad to provide full details and demonstration, or send latest Catalog.

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

PUMPS • SPREADERS • FINISHERS • CONCRETE MIXERS • TRUCK MIXERS

THIS PLANT on the west bank of Lake Maracaibo makes . . .



. . . **LONG** cylindrical piles being installed for foundation of . . .

. . . **DERRICK** that takes oil from bottom of Venezuela's Lake Maracaibo.

Mass Producing Prestressed Piles

With 27 oil companies operating on Venezuela's Lake Maracaibo, construction activity is high on the oil-rich lake. In the last two years one joint venture consisting of Raymond International Inc. and Brown and Root, Inc. has erected 150 structures in and over the 80-to-110-ft.-deep water.

The big problem in lake construction is the economical installation of suitable foundations. Tower bases must be strong enough to carry heavy dead weights of derricks and equipment and the live forces developed by vibration, wave action and collisions with barges.

R-B-R is meeting this problem with prestressed concrete cylinder piles manufactured in a plant set up on the west bank of the lake.

The piles, for the most part, are 36-in. OD and have a 5-in. wall housing 12 prestressing cables. Each cable consists of a dozen 0.192-in.-dia wires tensioned initially to 150,000 psi. Piles are manufactured by a patented process involving a combination of centrifugal force, vibration, and rolling. The casting is done with a dry mix to prevent separation of the aggregate from the mortar, and the concrete is dense. It has a 28-day strength of 7,500 psi.

The piles are cast in 16-ft sections, which are steam cured, then strung together on assembly beds. Joints are sealed with plastic; the sections are post-tensioned and the cables grouted in place.

The assembled piles are barged to location, lifted by a derrick boat and up-ended through a three-point pick-up. They are driven by a single-acting steam hammer.

A typical 30-ft square oil derrick base installed by R-B-R rests on eight piles, one plumb and one on a 1:3½ batter at each corner. The pairs of corner piles are capped with the four caps are topped with a prefabricated steel deck frame.

Fallout Protection

Shelters in every building proposed for W. Germany

Despite her precarious geographic situation in case of war, West Germany has not adopted a program for bomb and fallout shelters for the civilian population.

However, after several years of research, rejected plans and decision postponement, the Federal Defense Committee has now announced it will seriously discuss such a program within the next few months.

One of the subjects for discussion will be a proposal drafted by experts of the Interior and the Housing Ministry that calls for an air raid shelter in every building in West Germany and West Berlin.

Recognizing that complete protection is impossible, the initiators of the program believe, however, that their planned shelters will give sufficient protection as close as 1,500 ft away from an A-bomb like the one dropped on Hiroshima. In establishing the program, it was assumed that:

- There will be no warning time to allow persons to reach shelters outside the building.
- Radioactive fallout would force the population to remain in the shelters for days or even weeks.
- High military expenses for building up the German defense forces place a limit on expenditures for a civilian protection.

The proposed program suggests a law requiring an air raid shelter in every building in the Federal Republic—regardless of whether the building is old or new, or whether it contains apartments, or production facilities.

The shelters would have a braced, debris-proof ceiling and would be impervious to nuclear fallout as well as bacteriological and chemical weapons.

Assuming that a normal basement reduces nuclear radiation from 10 to 20 times, the German experts hold that emergency protection can be achieved by investing $48 per inhabitant in conventional cellar rooms.

More elaborate shelters would be built only at strategic points—traffic and supply centers and in towns with more than 50,000 inhabitants. Cost for these more solid shelters is expected to be about $200 per capita.

Residence shelters would be paid for by the homeowner, while the larger shelter costs would probably be shouldered by the government.

(*International continued p. 136*)

Quantity manpower, used to make jobs for unemployed, built . . .

Dam to Control India's Jumna

India's sacred but wayward Jumna River has been controlled at last, and the capital city of New Delhi has been assured a steady supply of water.

Wazirabad Barrage, a $2.5-million water supply facility, was completed recently as a river-training structure—to keep the Jumna River within its banks during the monsoon, the rainy season in India.

Just last year the river shifted its course in the wake of monsoon floods, leaving New Delhi's pumping station high and dry and causing a critical water shortage (ENR Nov. 13, 1958, p. 59). A new diversion channel had to be dug as an emergency measure.

Now that Wazirabad Barrage is completed the two million people of New Delhi are assured an uninterrupted flow of the Jumna to their pumping plant, providing 60 mgd in normal times.

Wazirabad Barrage is 1,991 ft long, an earth structure with concrete sluices and spillway. The spillway consists of 17 bays of 58 ft each. The structure was constructed by the state-owned National Projects Construction Corp. and was completed in eight months.

A concrete block apron has been provided on the upstream side; a filter apron downstream.

Deadline for Soil Papers Coming

United States authors who plan to submit papers to the Fifth International Conference on Soil Mechanics and Foundation Engineering should submit a statement on the contents of their proposed papers not later than Oct. 1, 1959 to John Lowe III, Secretary, U.S. National Committee for the International Society of Soil Mechanics and Foundation Engineering, 375 Park Ave., Room 900, New York, N. Y. This U.S. Committee is an administrative committee of the American Society of Civil Engineers' Soil Mechanics and Foundation Division.

The conference is scheduled to be held in Paris in July, 1961. The French organizing committee has proposed the following subject groups for possible papers:

Division 1—Soil Properties and Their Measurement.

A. Fundamental and Natural Properties.

B. Mechanical Properties.

Division 2—Techniques of Field Measurement and Sampling.

Division 3—Foundations of Structures.

A. Piling and Piled Foundations.

B. Other Foundations.

Division 4—Roads, Runways and Rail-Tracks.

Division 5—Earth Pressure on Structures and Tunnels.

Division 6—Earth Dams, Slopes and Open Excavations.

Division 7—Problems Not Dealt With in Divisions 1-6.

Since the papers are to be published in advance, the actual manuscripts will have to be in Mr. Lowe's hands by about Jan. 1, 1961, according to the committee.

Montreal Issues Costliest Construction Permit

The largest amount ever paid for a building permit to the City of Montreal was turned over at City Hall by Webb and Knapp (Canada) Ltd.

The check for $24,301.62 was to cover the cost of the construction permit for Montreal's largest structure—the high tower cruciform building of Place Ville Marie.

The 42-story building will rise in downtown Montreal around Canadian National Railway's terminal area.

Foundation work is almost completed and steel erection is to begin soon.

The completed Place Ville Marie project will also include a plaza, retail and restaurant space and a second building containing about 350,000 sq ft of office space. The project is a joint development of the Canadian National Railway and Webb & Knapp.

I. M. Pei & Associates, New York, and Arcop, a Montreal organization, are the architects. Severud-Elstead-Krueger, New York, associated with Brett-Oullette-Blauer Associates, Montreal, are the consulting engineers. The Foundation Co. of Canada is general contractor.

Russia Claims 'Concrete' Without Water or Cement

The Prestressed Concrete Parts Division of the Moskow Metrostroi has succeeded in making plastic concrete slabs containing neither water nor cement, according to Moskow News.

Main application of the material will be as a facing material in tunnels of the Moskow subway system.

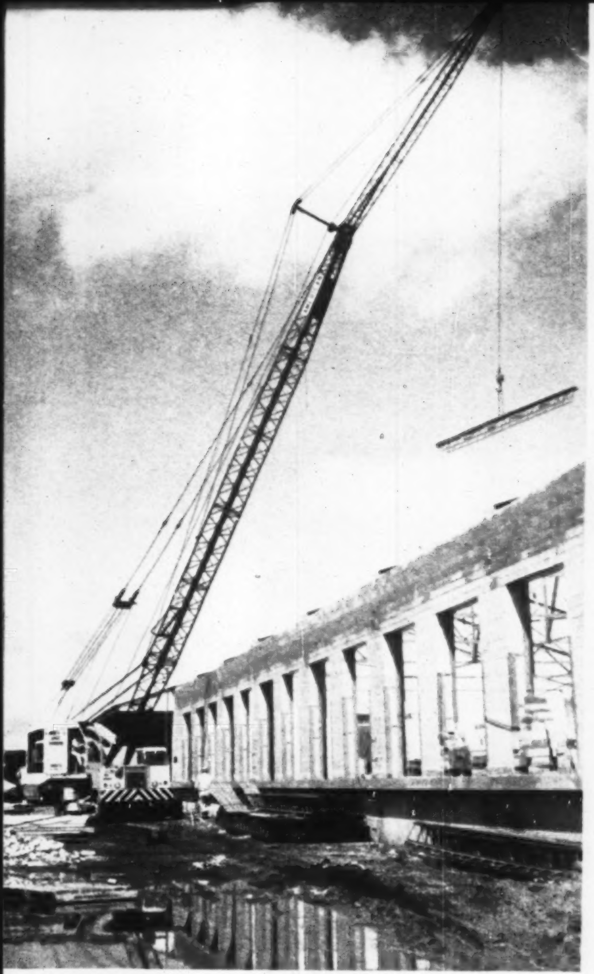
The plastic concrete reportedly consists of regular sand and gravel aggregates held by a binder of furfural (a synthetic resin plastic, made of vegetable wastes). The Russian report claims that the material is waterproof, fire-resistant and "highly durable." No data was released on results of compression tests on the material.

Panama to Build Highway To Historic Portobelo

The government of Panama has awarded a $1.3-million contract for preliminary work on a 12.5-mile road that will reconnect historic Portobelo with the country's highway system.

Portobelo, discovered and named by Christopher Columbus, fell into a decline during the past century and for many years has been accessible only by sea. The construction of a refinery in Portobelo makes the road a necessity.

(*International continued p. 138*)



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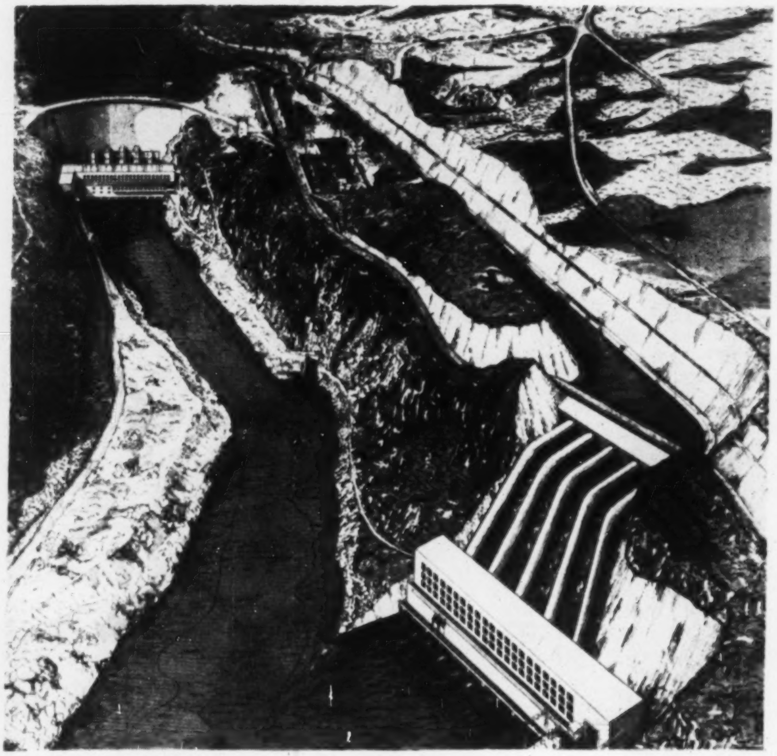

New Zealand to Double Maraetai Output

New Zealand engineers plan to add another 180,000 kilowatts of generating capacity to the Maraetai hydroelectric development on the Waikato River.

They will add the new capacity by building a second powerhouse downstream from the 180,000-kw existing plant and spillway tunnel outlet. A forebay channel for the new plant will extend from the existing reservoir to penstock intakes at the top of the cliffs above the new powerhouse.

Around the World . . .

- **Fiji welcomes jets**—A $7-million rebuilding project has equipped Fiji's Nandi International Airport for commercial jet aircraft. The main runway has been extended to two miles. Other work includes new control and administration buildings and sewage, electrical and fuel installations.

- **Bomarc goes north**—The first of two Bomarc anti-aircraft missile sites in Canada will be built near North Bay, Ontario, by Atlas Construction Co., Ltd., of Montreal. The other launching site will be in northern Quebec.

- **No expressways for London**—The government-appointed London Roads Committee rejected urban expressways as a solution to the city's traffic congestion. The committee reported that expressways would lead to greater central congestion and damage the city aesthetically.

- **Baghdad bazaars bumped**—Traffic trouble has reached Baghdad, too. The city's crammed, crawling markets will be moved to two public markets built on opposite sides of the city outside city limits. Project cost: at least $4.2 million.

- **Bavarian link with the sea**—Four groups are proposing plans for a petroleum pipeline from Bavaria to the Mediterranean with one or more refineries to be built at the terminal. The project was initiated by the high cost of petroleum products in south Germany.

- **Canada locates A-plant** — Atomic Energy of Canada and the Ontario Hydro Commission will build Canada's first big nuclear power plant on the eastern shore of Lake Huron. The 200,000-kw installation will be erected at Kincardine, Ontario.

(*International continued p. 140*)

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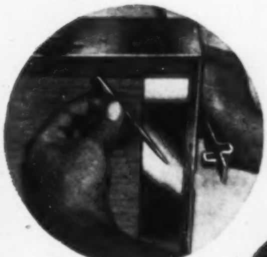
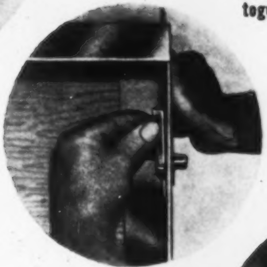
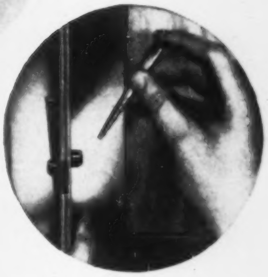
SECONDS TO INSTALL UNI-FORM TIE AND ASSEMBLE PANELS



1. UNI-FORM Tie Loop placed in square tie hole of Panel.



2. Tie Key set into the Tie Loop. Panel and Tie are now locked together into integral unit.

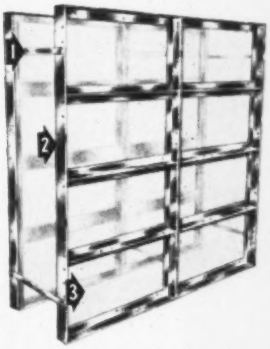


3. Next UNI-FORM Panel is placed in position. Tie Loop automatically enters square tie hole. Key is dropped in—assembly is complete. NO COMING BACK TO "FISH" TIES.

When you can tie and lock two concrete form panels in a few seconds, you're forming concrete fast! This is exactly what you can do with the UNI-FORM Panel System—the fastest system of forming concrete ever developed.

Faster tieing is only one of many UNI-FORM Panel features that makes them *the* pre-fab forms contractors are using on every kind of concrete construction. Write for the UNI-FORM Panel System Catalog and full details . . . or, call your nearby Universal Distributor or Branch Office for personal attention immediately.

UNI-FORM PANELS ERECT INTO A TIGHT, RIGID, AUTOMATICALLY ACCURATE CONCRETE FORM



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Construction in Britain Hits New Highs in 2nd Quarter

Housing and public works pushed output of Britain's construction industry to a new high in the second quarter. But building for private industry remained almost static, even slightly lower than a year earlier.

Value of the industry's output through June was $1.036 billion, $75.6 million more than in the previous quarter.

House building accounted for $400 million and public works for $322 million of the total. These are increases of $30.8 million and $42 million respectively over the first quarter for the two categories.

But private industrial building, at $173.6 million, is down $11.2 million from a year ago.

Peru Sells Airport Land To Finance a Replacement

Work will begin in early October on a $7-million international airport for Lima, Peru. The existing airport at Limatambo, which can't handle jet airplanes adequately, will be sold.

Bids were called in August for an 11,481-ft landing strip, parking areas, taxi strips and handling facilities. The landing strip must be ready to receive jet planes in March.

The existing Limatambo airport could not be economically expanded, because of the high cost of adjacent properties. As a result, the new airport will be financed by the sale of land at Limatambo, which lies in a heavily populated area of metropolitan Lima. About $13 million is expected to come from this sale.

Network of Super-Highways Planned for East Europe

A Russian-financed network of 1,860 miles of super highways will be built in Czechoslovakia, Hungary and Poland. The heaviest concentration of work will be a series of routes radiating westward from Uzhgorod, in the southwest Ukraine. The eastern terminus of most of the routes for the highways is the U.S.S.R. border.

The project is the outgrowth of a recent meeting of the Commission for Transport and Communications, a division of the Soviet-dominated Council for Mutual Economic Assistance. The delegates included not only engineers and economists, but high-ranking army officers. Russia, through the Council for Mutual Economic Assistance, will grant long-range credits to finance the highways.

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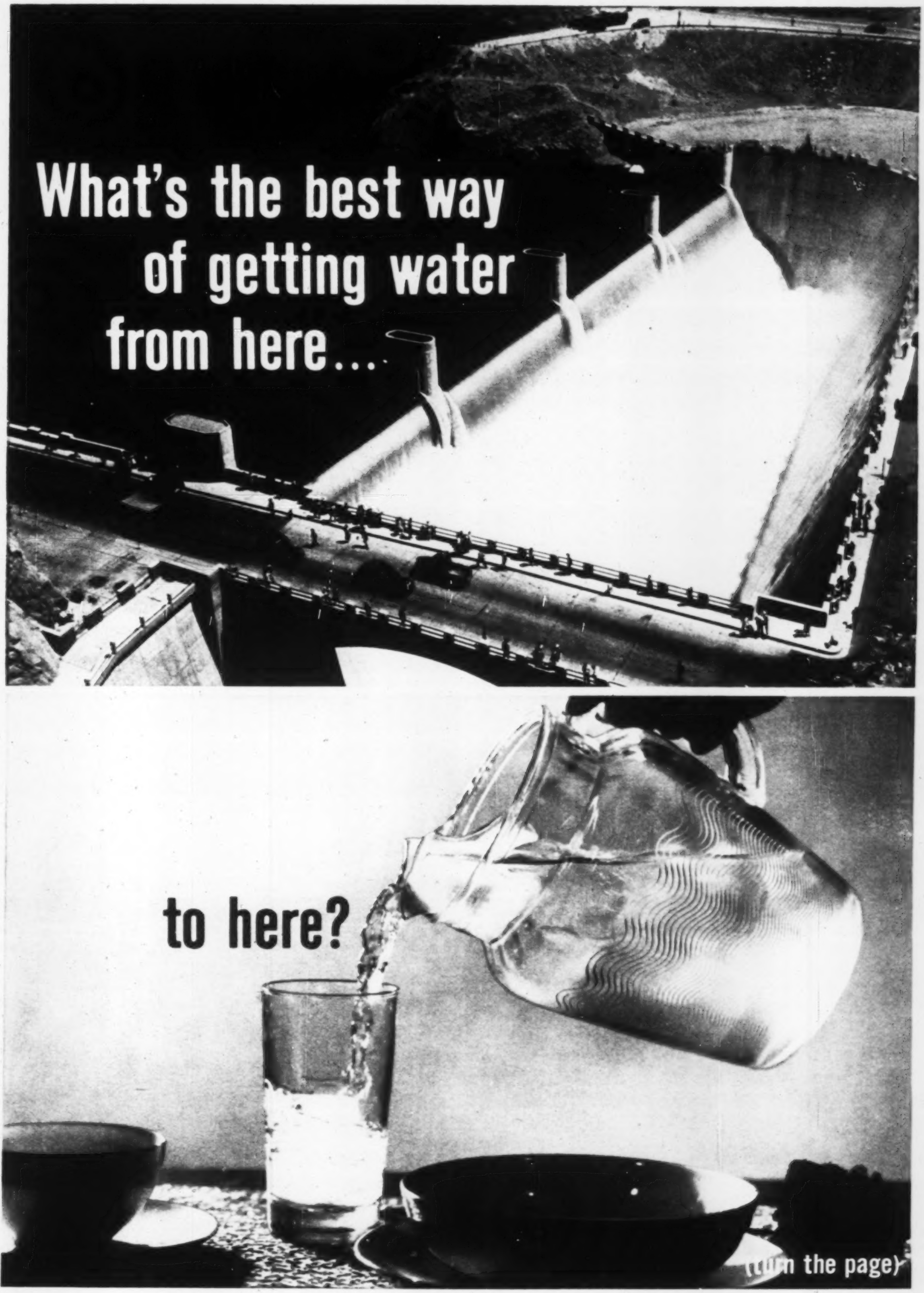
What's the best way
of getting water
from here...
to here?
(turn the page)

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Roadside installation of 8-inch mechanical joint cast iron pipe for gas utility main extension.

Why do we say that?

This year, as every year, more miles of underground cast iron water mains are in use than all other kinds of pipe combined.

Furthermore, more miles of cast iron water mains are now being purchased and laid than of any other kind of pipe.

Yes, cast iron is always the favorite. A recent impartial survey showed that consulting engineers and water utility officials prefer cast iron pipe for underground water distribution by an overwhelming majority.

36-inch mechanical joint cast iron water main rerouted because of superhighway construction.

Section of 16-inch gas transmission main being installed through a new subdivision.

Municipal water improvement program included installation of 35,000 feet of 42-inch mechanical joint cast iron pipe (above) and 9280 feet of similar 30-inch pipe.

Supplemental water supply line for municipal water authority uses 13,500 feet of 16-inch pipe.

What are its advantages?

- LONG LIFE. The cast iron pipe you install today will be performing economically a hundred years from now.
- HIGH-CAPACITY FLOW. Cement-lined cast iron pipe will deliver the full-rated flow all through the years. No other pipe, size for size, can carry more water.
- CORROSION RESISTANCE. Long life proves it. Most water utilities are still using the first cast iron pipe they installed.
- GREAT BEAM STRENGTH. Cast iron pipe resists the effect of heavy traffic, shifting soils.
- TREMENDOUS LOAD RESISTANCE. Six-inch cast iron pipe (Class 150) withstands a load of nearly nine tons per foot!
- PRESSURE-TIGHT JOINTS. You have a complete choice of leakproof, easy-to-assemble joints. You need a minimum of tools and work crew.
- EASE OF TAPPING. No tapping saddles needed. Takes threading best of all kinds of pipe.

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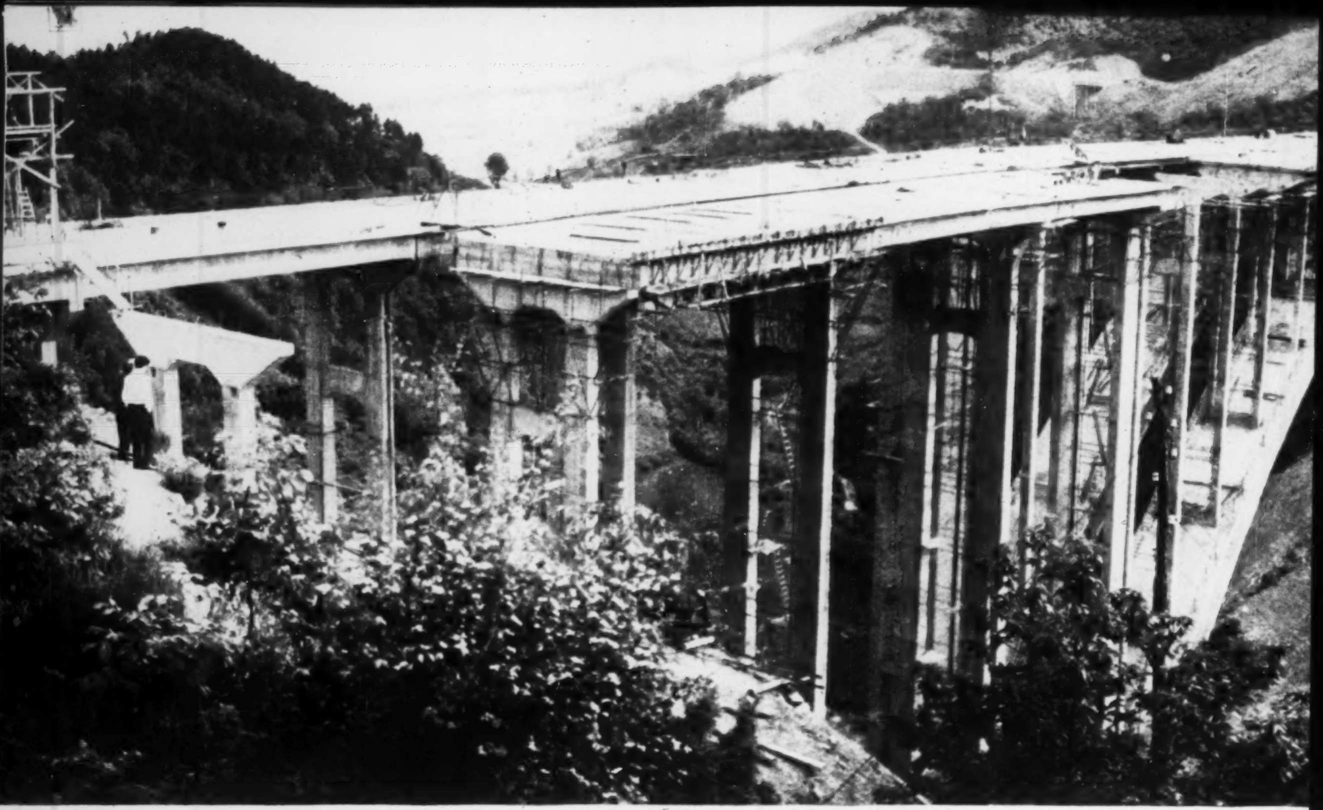
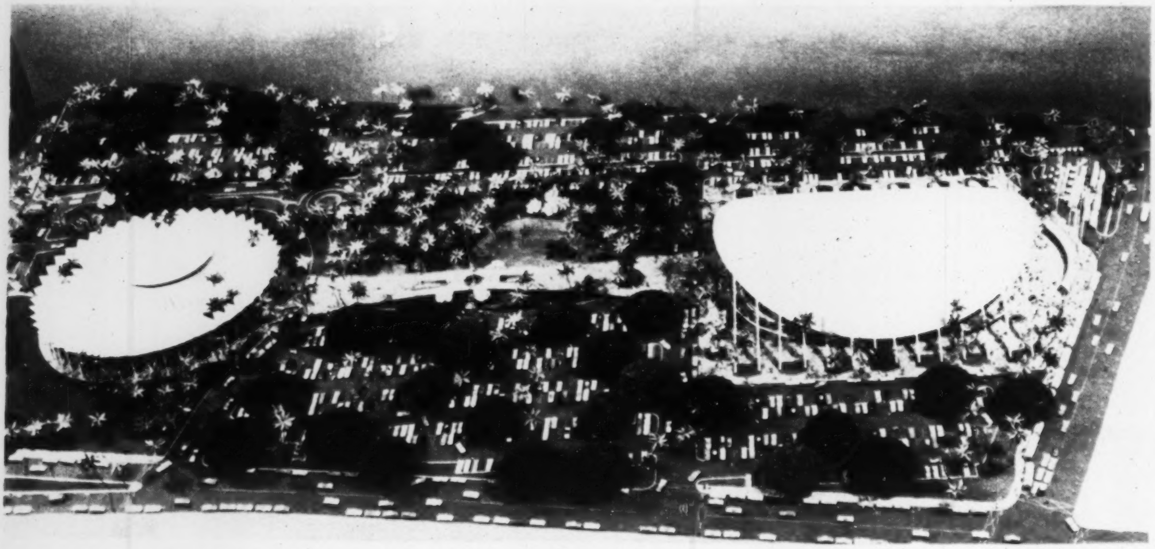


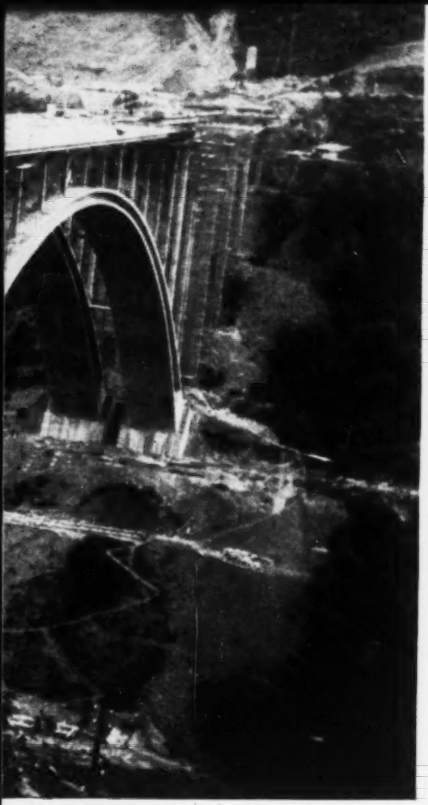
Highway of the Sun Spans a Tuscan Valley

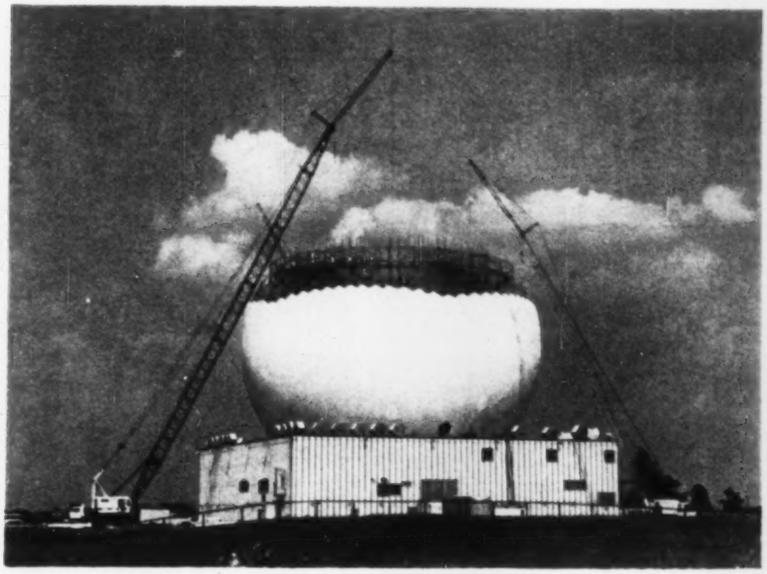
This high concrete arch, part of Italy's 600-mile Highway of the Sun, spans the Aglio River Valley near Florence, 250 ft above the stream. It is 550 ft in length. When completed in 1962, the Highway of the Sun will connect Milan in the north with Reggia in the extreme south. The highway is expected to be linked with Sicily by a suspension bridge over the two-mile Strait of Messina. Tentative foundation sites have been established.



Honolulu Builds a Memorial Park

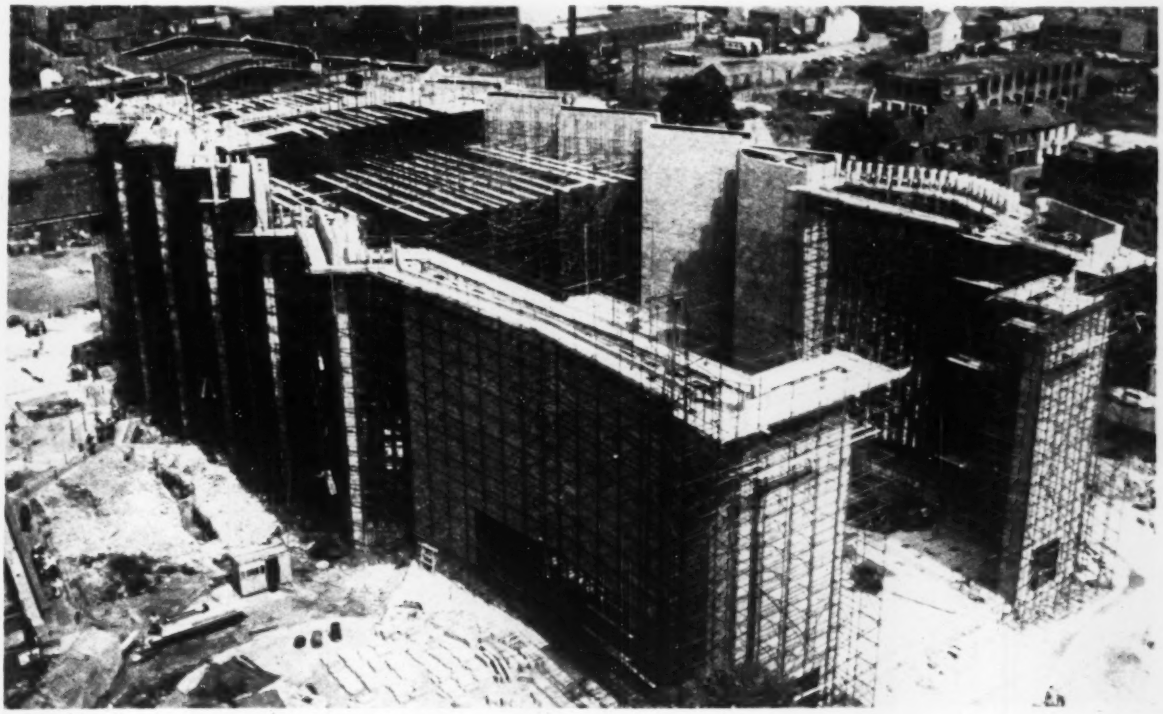
A concrete vault roof, 400 ft long and carried by 14 arches, will cover the arena of Honolulu's War Memorial Park. At the left end of the park, a folded plate concrete roof forms a combination concert hall and theatre. Seating capacity of the arena is 8,000, expandable to 10,000 by using floor court space. The concert hall will accommodate 2,400 persons on one side of the circular building. The theatre will seat 600 on the opposite side.





Arctic Radome Grows in New Jersey

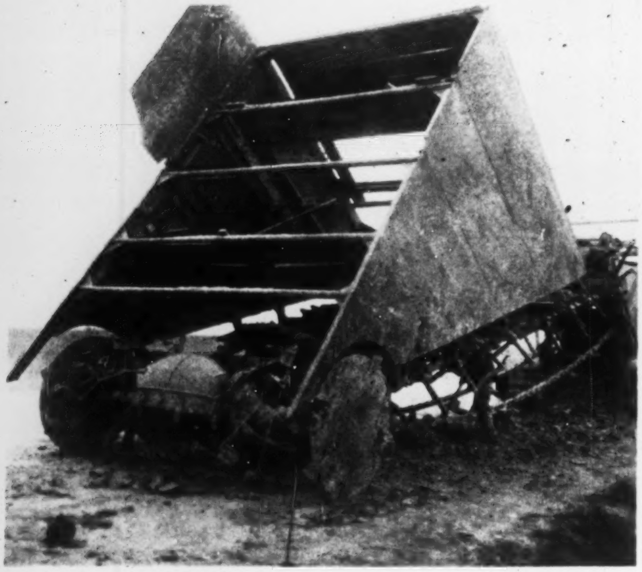
It's made of paper and measures 140 ft across. Built in Morristown, N. J., to test equipment for the Ballistic Missile Early Warning System, the radome duplicates tough plastic-paper domes to be built in Alaska and Greenland.



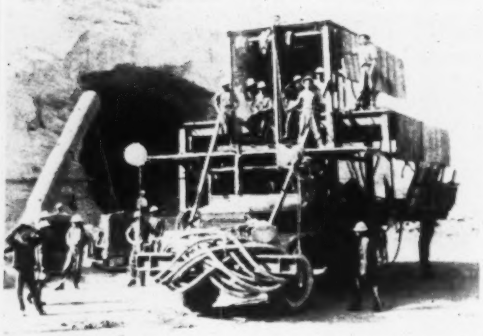
A New Cathedral Rises in Coventry

Brick-clad concrete walls rise 80 ft to form the shell of Coventry Cathedral in Warwickshire, England. Stained glass windows, facing the altar, will close the spaces between wall sections. A shallow-pitched, concrete roof will cover the building, and two rows of precast concrete columns will carry an independent, vaulted oak ceiling inside. The $2.2-million project, begun in 1955, will be completed at the end of 1961, according to present construction schedule.

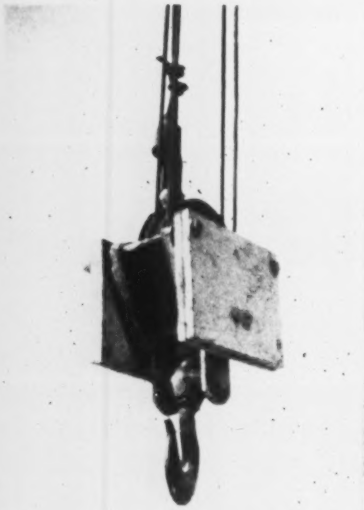
Here Are 10 Construction Tricks



1. Slip-Wall for Ditches—A light metal shield attached to a ditching machine supports the sides of a ditch behind the unit until cribbing can be installed. The model shown here can be used in ditches 14 ft wide and as deep as 26 ft.



2. Mobile Platforms—Folding platforms on a truck enable men to drill blast holes in a tunnel at three levels simultaneously. Truck carries compressor unit.



5. Fast Fall—A set of inexpensive metal plates attached to each side of a crane block makes it drop faster. Plates take less space than steel ball.

6. Asphalt Breakers—A ripper-equipped dozer, pulled by two other dozers, is used for rapid ripping of a 9-in. asphalt runway. To keep pieces small, rig makes a series of passes at 6-ft intervals, then returns to rip remaining strips. Rig has ripped 90,000 sq yd per day.

You Might Use

3. Super Service Station—Six posts, three on each side of this scraper, are fitted with grease connections. As one man pumps gas, six others shoot grease into all lubrication points. Rapid service means additional hours of use from equipment.

4. Aerial Platform — Sandblasters and painters work on this bridge from a 4x4-ft, angle-iron cage held at convenient points by a crane.

7. On-Site Repairs—This rig carries arc-welding equipment on a trailer. It can be disconnected and used at any job site. Acetylene bottles ride on the truck. A boom of channel iron is mounted on the back bumper. A chain hoist can be attached to the top of the boom.

8. Lifting Device—A crane can be made for a truck from a piece of 2-in. pipe, scrap metal and a jack. The jack raises the boom, which can lift 2,000 lb.

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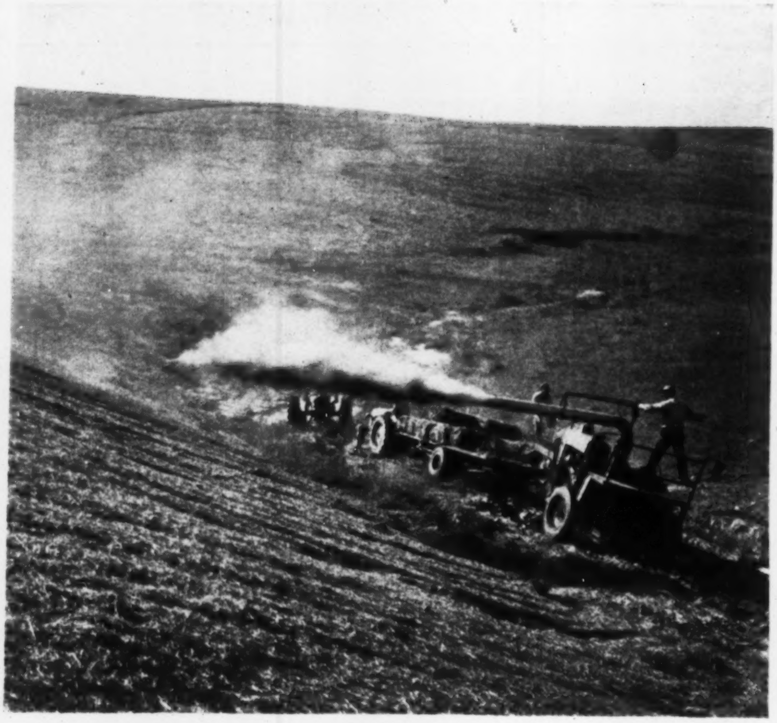
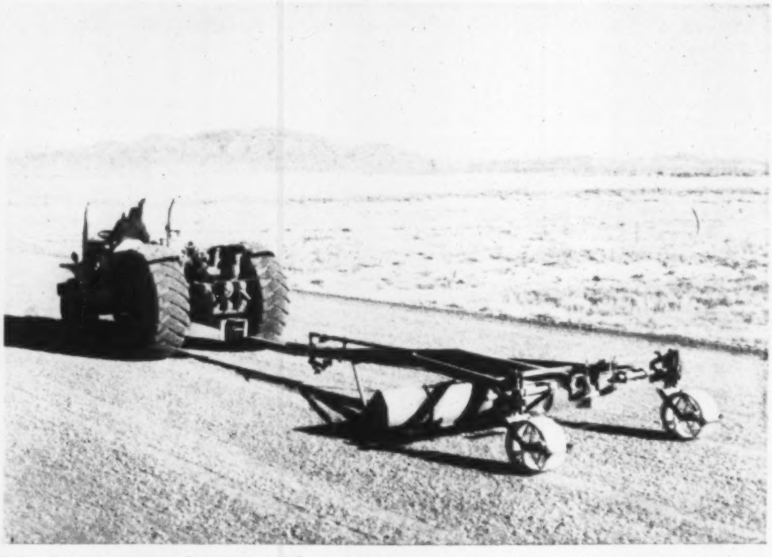


9. Straw Blanket for Grass—Straw blown onto steep slopes adjacent to newly built highways provides a cover for grass seed. The seed gets a chance to take root and thus prevent erosion. Tractors tow the blower and trailers loaded with bales of hay.



10. Removing the Wrinkles—This land plane was made in a contractor's shop. Used for federal highway work, it runs after the finish blade and before the steel roller to remove the rough spots left by the motor grader. It is 10 ft wide and 30 ft long.

(Field and Office continued p. 150)

How About You?

What field and office techniques are you using that would be of interest to other construction men? Send them to ENR, 330 W. 42nd St., New York 36, N. Y. We pay for all material published.

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ARCHITECTS:
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CONTRACTOR:
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of this vapor barrier
were used.

Nels Hanson, Supt., Williams & Burrows, Inc.

MOISTOP USED FOR UNDER CONCRETE FOUND EASY TO APPLY ON BIG UNIVERSITY HOUSING JOB!

Mr. Nels Hanson, Superintendent for Williams & Burrows writes, "Everyone concerned with this project was more than pleased with the *toughness* and *ease of application* of Moistop. In my opinion, this is an excellent membrane material. It stood up remarkably well under the heavy traffic necessary to get the slab poured."

Moistop is made by combining rot-resistant Sisalkraft with a sheet of pure polyethylene film. It has amazing strength and body plus chemical inertness for permanent protection. Moistop prevents moisture migration through floors. During the pour, it also prevents any loss of the mix due to seepage into the ground or fill. It is an excellent moisture stop for foundation waterproofing or as a crawl space ground cover. Available in widths of 72", 84" and 96" — also in narrow widths for flashing. Write Dept. 10, Attleboro, Mass. for informative booklet.

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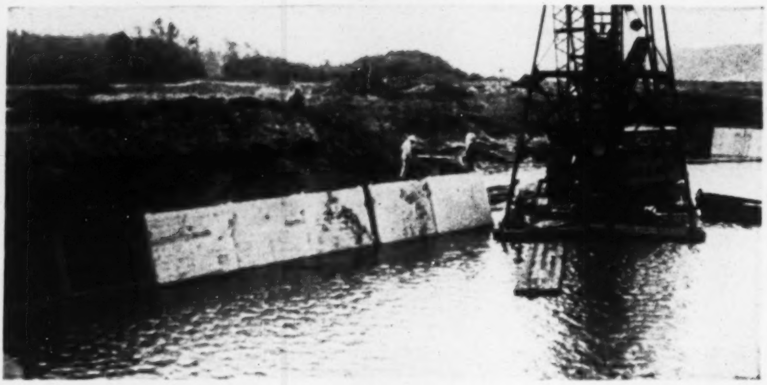


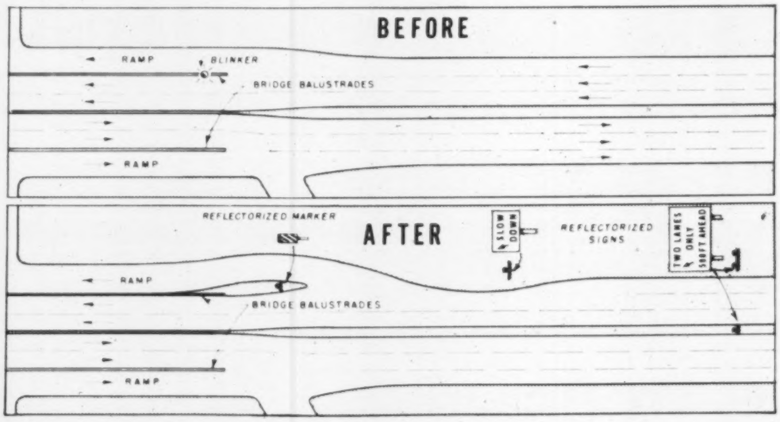
Precast Panels Line a Canal

Developers are using precast reinforced concrete panels as walls for a system of canals that will make almost every lot a waterfront tract in a residential development on Lake Washington, near Seattle.

Supporting frames for the panels are log pilings and horizontal timbers along each side of the canal excavations. The panels, 10x10 ft by 6 in., are cast at the site, dragged to the canal on log sleds and hung by a crane. Angle irons at the tops of the panels permit hanging them on the horizontal timbers. Steel rods anchor the sections permanently to concrete deadmen sunk about 20 ft from the canal. The excavations are backfilled on the land side of the panels.

Topped by a cast-in-place concrete curb, the concrete walls will contain the earth fill, prevent erosion and allow the mooring of boats in front of each house.

Newport, Inc., developer of the project, has installed some 7,000 ft of concrete banks, at a cost of about $300,000. The company plans to put in about 53,000 ft more of bank in the next four years.



Engineering a Lifesaver

A seemingly simple traffic engineering change is credited with saving lives on what was a dangerous approach to the Rt. 1 bridge over the Rahway River in New Jersey.

In the three years before the approach was changed, two persons were killed and five injured in eight accidents on that stretch of road. Then Ralph L. Fisher, of the New Jersey State Highway Department, redesigned the approach as illustrated above, to cut the number of lanes and thus force lower speeds.

In the three years since the change—not a single accident. Cost of the project was $7,600.

For his idea, the Association of Casualty & Surety Companies presented Mr. Fisher with a certificate and $100 in cash.

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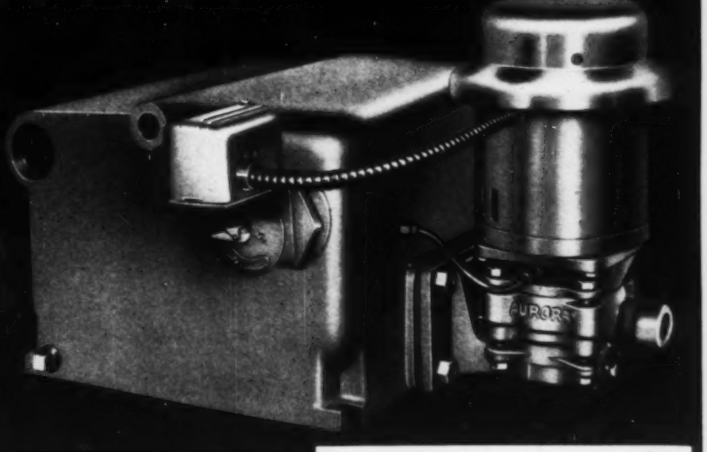

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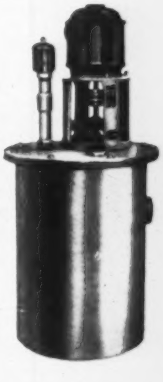

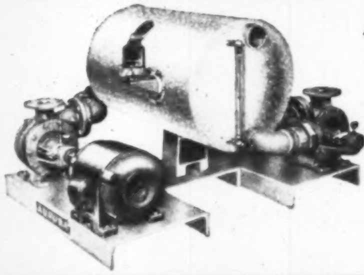

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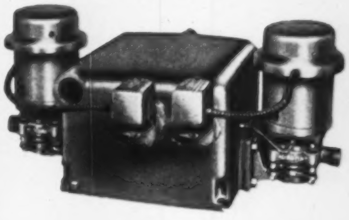

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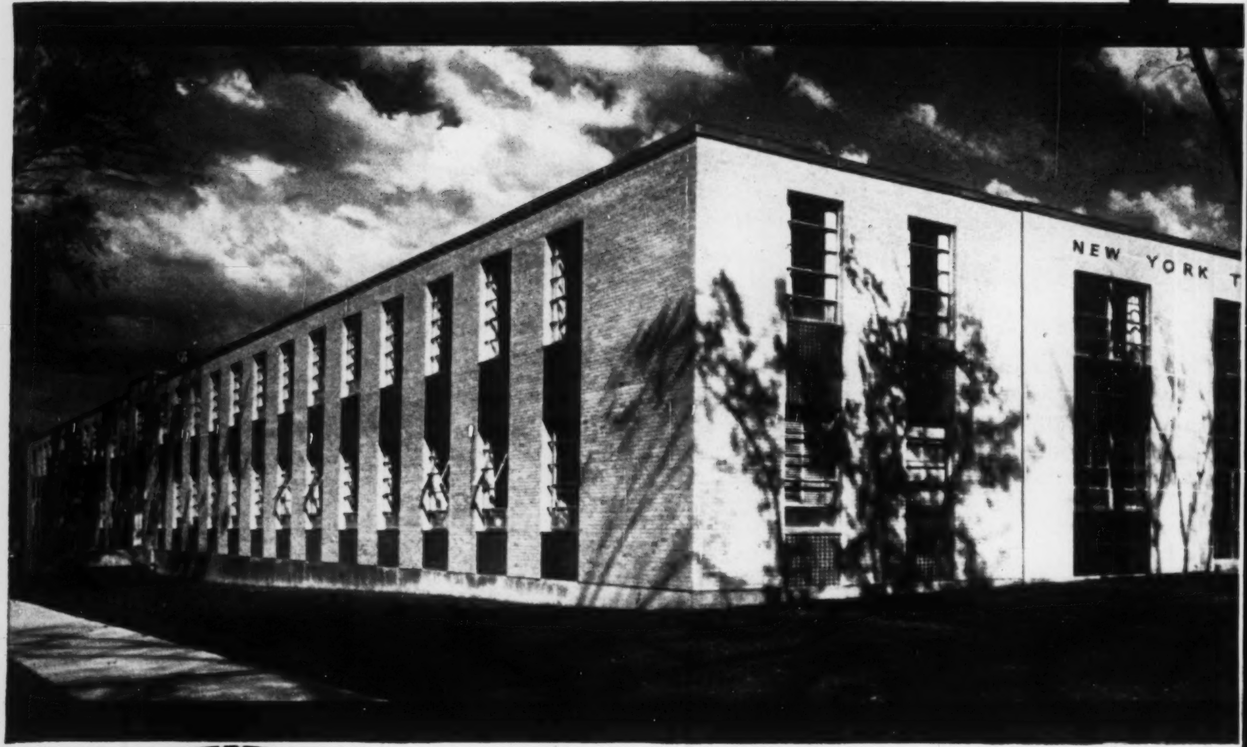
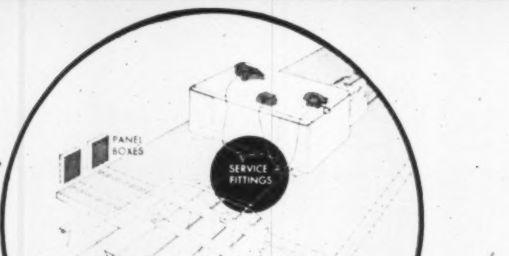
CIRCLE 151 READER SERVICE CARD

Underfloor Electrification isn't NEW...
But it's NEWS when a quality system
offers big savings so any building
"can afford" electrification



This construction view shows the clean arrangement of header ducts installed on Ceco E C Joists. These header ducts were installed quickly and economically by an electrical crew which had never before installed a system of underfloor electrification.

Electrical, telephone and signal wires are run from the panel boxes down through the header ducts, into the top chord of the E C Joist and up through the service fittings to desks located anywhere on the floor. Whenever desks are moved, the fittings can be installed anywhere along the joists to service the new positions.
The E C Joist system is listed by Underwriters' Laboratories for use with standard header ducts and electrical accessories manufactured by General Electric Co., National Electric Division of H. K. Porter Co. (formerly Nepco) and Walker Bros. of Conshohocken.


PANEL BOXES
SERVICE FITTINGS
POWER & LIGHT CIRCUITS
TELEPHONE & SIGNAL CIRCUITS
HEADER DUCTS
HAND HOLE
CONCRETE SLAB
STD JOISTS
E/C JOISTS

TOTAL MANUFACTURING FOR THE BUILDING INDUSTRY FROM RAW TO FINISHED PRODUCTS

CIRCLE 152 READER SERVICE CARD

CECO'S E/C JOIST SYSTEM OF UNDERFLOOR ELECTRIFICATION ASSURES QUALITY WITH ECONOMY

New York Telephone Company Building, Utica, N. Y.

Architect: Frank C. Delle Cese, Utica.

General Contractor: McKay Construction Co., Oneida.

Electrical Contractor: Keller Electric Company, 36 Genesee St., New Hartford, N. Y.

When a building method offers quality at a cost lower than any competing system, that's a combination hard to beat.

Add to that down-to-earth practicality, plus design that satisfies the future . . . then you can specify with confidence.

Such is Ceco's E/C Joist system of underfloor electrification. Savings are realized because Ceco's E/C Joists do two jobs: 1—provide raceways for underfloor electrification; 2—carry the floor load. Now any building "can afford" underfloor electrification.

These advantages of Ceco's E/C Joist system were proved in the Utica, New York Telephone Company office building.

The architect specified Ceco's E/C Joist system and a commonly used alternate. The successful bidder's figures showed the Ceco system saved 56¢ per square foot compared with the alternate. Read what those concerned have to say:

Owner, Milton A. Abelove and Daniel B. Myers:
"The E/C Joist system satisfied our requirements of avoiding electrical obsolescence for years to come, and we saved a considerable amount of money."

General Contractor, John T. McKay:
"The savings shown in the bids were proven on the job by the Ceco E/C Joist system. I would like to erect more buildings using the same system."

Electrical Contractor, Reginald Keller:
"Installation of the E/C Joist system was practical. Our workmen were able to install it economically, even though they had never installed underfloor electrification using header ducts."

On your next job specify the Ceco E/C Joist system. Send for the facts now. Mail the handy coupon today. Ceco Steel Products Corporation. Sales offices, warehouses and fabricating plants in principal cities. General offices: 5601 West 26th Street, Chicago 50, Illinois.

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Please send the following technical literature:
☐ E/C Joist Manual #3011-A ☐ Steel Joist Catalog #3001-O ☐ Joist Load Tables #3009

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☐ If student, check here for special data.

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

Optical Plummet solves problem on Niagara Power Project

"Sometimes a seemingly little thing can make a big job easy," says Frank Dickey, Project Engineer on the Niagara Power Project for Channel Constructors—a joint venture of Peter Kiewit Sons' Co., Morrison-Knudsen Co., Perini Corp., and Walsh Construction Co.

"We had an unusual problem here on excavations for the 500-foot-wide channel which will handle the water for the new Niagara hydroelectric plant. The conduits will pick up water from the Niagara River a couple of miles above the Falls and carry it underground through the city to an open channel, reservoir and 2,190,000-kilowatt power plant located several miles down the river.

"The channel had to be cut from dolomite. We decided to line drill the full 105-foot depth at one time, using 6-inch diameter holes on 5-foot centers. It was our intent to line drill the entire job, some 1600 holes, before any of the excavation was finished to grade. This made it necessary to devise a method of checking the holes for plumb from the surface so as to be sure that they did not deviate enough to get outside the tolerance allowed by the specifications.

"We thought of several ways to do this but none very practical, until one of the men mentioned having used a Gurley Optical Plummet Transit on another kind of job up in Canada. We decided to try the 'bobless transit' here.

"We set up over the opening; then leveled the instrument with the North plate bubble over two opposing leveling screws. Then we sighted in the Optical Plummet and started moving the other two opposing leveling screws until we were able to pick up the light—by means of the 'OP'—from a dime store flashlight which had been lowered into the hole by a string.

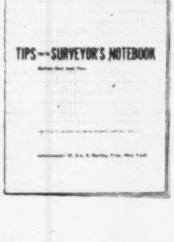
Frank Dickey (r.) checks Gurley Optical Plummet Transit on Niagara Power Project job.

"While moving the two opposite screws, we constantly checked the North plate vial to make sure that it remained level throughout the movement. After we picked up the light from down the hole, we moved the telescope until its bubble was in the center. When this was established, we read the vertical circle—this giving us the angle at which the hole had been drilled.

"This proved to be accurate and a fast system for checking the holes and undoubtedly gave us a better job than we could have otherwise obtained.

"This use of the 'OP' is a special case," Mr. Dickey added. "But I'll bet there will be many other jobs that the 'OP' can lick. For years I cussed the plumb bob, especially when the wind was blowing...always wished someone would do something about it."

You, too, can do something about the plumb bob problem. Gurley *built-in* optical plummets eliminate outmoded bobs...save set-up time...improve accuracy. *Bulletin OP-100 gives complete details on two models available.*



TIPS--SURVEYOR'S NOTEBOOK

"Tips from The Surveyor's Notebook": *We have collected the most helpful, most discussed pages from Series One and Two of "The Surveyor's Notebook" in one 20-page book. These valuable field suggestions will help you use your own instruments with greater success. Write for your free copy.*

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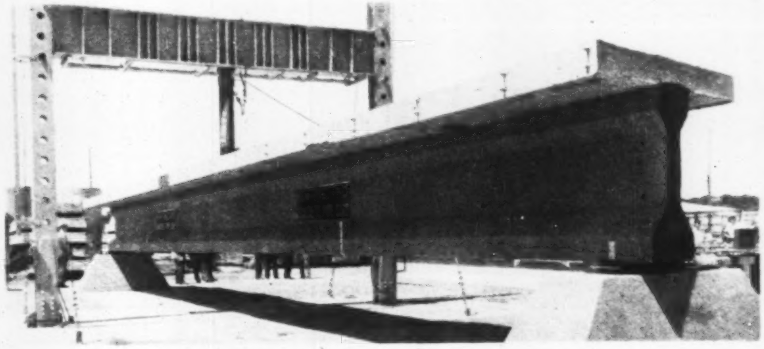
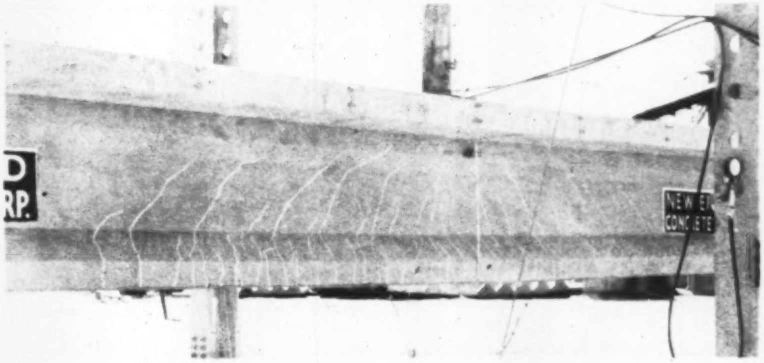
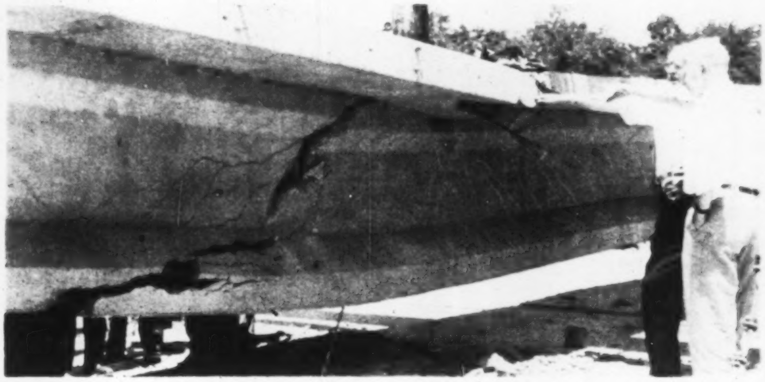


Ready for loading, beam-and-slab sits on simulated field supports.



This crack pattern showed at loading of 1.2 times design ultimate.



Here's how the composite bridge member looked at failure.

Beam-and-Slab Holds Up Easily

The AASHO Type III prestressed concrete beam met U. S. Bureau of Public Roads criteria with ease when tested to failure as a composite member for the first time.

The test was one of a series on prestressed beams conducted at the Dedham plant of the New England Concrete Pipe Corp.

The test girder was selected from a stockpile of 152 AASHO Type III beams fabricated for use on ten bridges along Rhode Island's new East Providence Expressway.

It was 67 ft. 4⅞ in. long, with a 7-in.-deep, 6-ft-wide slab cast on the girder to simulate the composite action of a cast-in-place deck.

Slab width and tendon patterns were determined for optimum use of the concrete with a graphical design procedure for prestressed concrete developed by Neal B. Mitchell, Jr., of Charles A. Maguire & Associates, Providence consultants; beam design was supervised by R. L. Pare, chief structural engineer.

Architectural considerations for the bridges called for beams without end blocks. The use of pretensioned strands and one post-tensioned cable on the longer and heavier loaded spans permitted elimination of this unacceptable visual element.

Thirty-six $\frac{7}{16}$-in., 7-wire strands were pretensioned to an initial load of 18,900 lb, and one 18-wire 0.196 draped post-tensioned cable was loaded to 190,000 lb. The post-tensioned cable was end-anchored by a Freyssinet plug and cone and pressure grouted with cement mortar. The concrete strength as indicated by test cylinder was in the order of 6,500 psi for the beam.

The test was conducted using elastomeric bearing pads to give actual field support conditions.

Test procedure consisted of first loading the beam to service load (DL+LL) and then removing the load. The beam was then loaded to cracking before again removing the load. The third loading sequence was to failure.

The initial camber of the beam was 1¼ in., and when loaded to service load had deflected only 0.35 in. At cracking load the deflection was 0.95 in., and deflections in the range of 19 in. were noted at failure.

The cracking load factor of the test beam was 1.59 M_T and the ultimate load factor was 1.5 M_D + 3.7M_L. Both factors are well in excess of those recommended in the various criteria of design.

Initial cracks opened on the lower flange of the beam at cracking load. As the load increased, large deflections with yielding and bond slippage of the slab steel was apparent. This finally resulted in the rupture of the slab. The loss of composite action due to slab rupture at total test load caused rapid beam overload and final failure.

Failure of the slab started at the exterior edges and progressed toward the beam. This seems to indicate that the entire slab was acting prior to failure.

The beams were fabricated by The New England Concrete Pipe Corp. for the general contractor, M. A. Gammino Construction Co. The beams were designed for the Rhode Island Department of Public Works, Division of Roads and Bridges.

Business Profile

THREE GENERATIONS: (l. to r.) Edward, John, Peter, Norman, Robert, Alan Tishman. Portrait is of Julius.

Tishman: An Old Firm With New Ideas

Back in 1898 Julius Tishman operated a men's clothing store in lower Manhattan. Business was good; he made some money and wanted to invest. Real estate seemed a good investment to the enterprising young man, so he set about constructing a six-story tenement house.

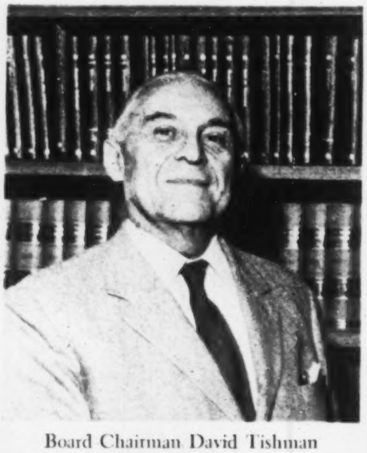
Today—61 years later—Tishman Realty & Construction Co. is among the largest investment builders in the country, with properties stretching from New York to Los Angeles. The company owns 11 apartment buildings, 17 office structures and three shopping centers, representing an investment of over $100 million.

Now, after all these years of investment building, Tishman is embarking on its first major diversification—Tishman Equipment Leasing, Inc.

A wholly owned subsidiary, TEL will build, equip and lease industrial sites throughout the country. Or if a client prefers, it will just equip a plant. "We are prepared to accommodate any industry from aircraft to electronics and road building," explains President Norman Tishman.

Under the new plan, the customer determines his equipment and housing needs. TEL then buys the land, erects and equips the plant and leases it to the client. "Our major advantage over other contractors is that we offer a complete package," notes Norman Tishman.

Leases under the TEL plan will differ. Purchasing and building will not start until a lease is negotiated. Here's an example of how it works. The plant is leased for 20 years, the equipment for five. The rent over the first five years will amortize the cost of the equipment and yield a profit. After that, the client can either buy the equipment or continue to rent at reduced rates.



Board Chairman David Tishman

"For years we have been in the market for a diversified but allied activity," says Mr. Tishman. "With our experience in construction and finance, we are really in an advantageous position."

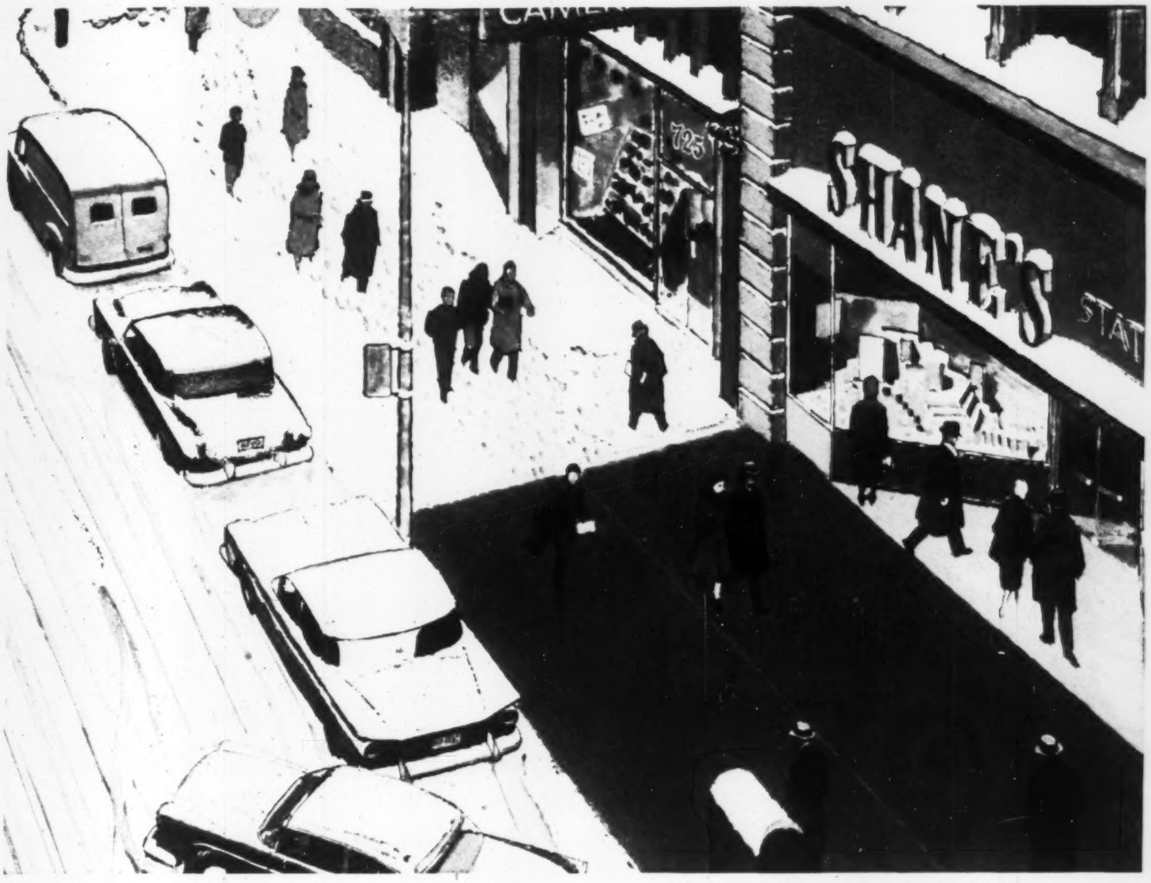
Where will the clients come from? "That's no problem," Mr. Tishman remarks, "we're already swamped with requests."

• **Pioneer days**—As investment-builders, the Tishmans have always tried to pioneer new areas.

After his first venture in 1898 Julius Tishman continued erecting housing structures in Manhattan. In 1908, however, he raised his sites to the area above Manhattan's 86th St. Despite the warnings of realtors who claimed that nobody wanted to live that far north, he erected a nine-story apartment house. It was soon fully rented.

Between 1909 and 1916 Mr. Tishman put up seven more residential buildings in the same area.

In April 1912, the corporation of Julius Tishman & Sons, Inc. was formed with Julius Tishman as president and David Tishman, his oldest son (currently chairman of the board), vice-president and secretary. When his other sons came of age, Mr. Tishman brought them into the business. Alexander (now treasurer) was in charge of



steel pipe snow melting systems pull customers in, provide walking safety, eliminate sidewalk maintenance

Today's store traffic competition is keen. That's why modern retailers are so aware of their "exterior image." The sales impressions their fronts and window displays create often mean the difference between profit and loss.

One of the most dramatic, effective and low-cost ways that you can provide the organizations you serve with "added sales extra" is to recommend *steel pipe* snow melting systems. Thousands of business places have tested and proved the magnetic attraction that automatic snow melting gives. Pavements clear of snow and ice draw customers in . . . and it's the kind of service that creates the very best image to customers, prospects and the community alike.

Sturdy, durable *steel pipe is first choice* for automatic snow melting, with reason. It is economical, easy to work, simple to install. The same advantages make *steel pipe first choice* for fire sprinkler systems, conduit, vent and drainage lines, structural uses, radiant heating, refrigeration and gas, air and water transmission. Next time, make it *steel pipe*.

Illustration from booklet "Snow Melting and Ice Removal" shows steps in a sidewalk installation. For details on snow melting systems, write for this 32-page booklet.

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- Strength unexcelled for safety
- Formable—bends readily
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- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
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TISHMANS SELL Los Angeles co-op apartments as high as $125,000.

666 Fifth Avenue skyscraper.

construction, Louis, who died in 1931, and Norman were in charge of financing and administration.

In 1923 the company made another notable move. It built a 22-story office building in an area that was predominantly industrial lofts.

During this time the company also moved into real estate trading.

Until 1929, few Manhattan investors would build east of Lexington Ave. In 1930 the Tishmans opened two apartment structures in that area; each was fully rented. But then came the depression, and for the next 10 years all building stopped for the Tishman Co. "We got by on rent and worry," says Norman Tishman.

World War II brought the Tishman Co. back into action with government contracts.

With the end of the war it again plunged into construction with the first postwar office building in Manhattan, in a district that had been exclusively residential. In this 22-story skyscraper it introduced several construction firsts: basement to penthouse air-conditioning, electronically controlled, high-speed elevators, a perimeter without columns, continuous windows, dry acoustic ceilings, and flush fluorescent light panels.

• **National expansion**—Up to 1950 Tishman activities had been centered in New York City.

In 1950, while vacationing in Los Angeles, Norman Tishman stood in front of his hotel window looking over the city. Adjacent to the hotel he observed a large tract of land used as a golf driving range. It looked like an ideal spot for a series of office buildings.

Today the Tishman Co. is reputed to be the largest landowner in Los Angeles. A chain of five office buildings stretch along the city's Wilshire Blvd. Two more are in the planning stage. An eighth—a 22-story skyscraper that will be the city's tallest building—is under construction.

This year the company completed the Wilshire Terrace apartments, a 14-story luxury cooperative. Units in this building sell anywhere from $35,000 to $125,000.

The company has also been building in Buffalo, Cleveland, New Orleans, Yonkers, N. Y., and Long Island. It has built and invested in three large shopping centers and has completed three housing developments. Trading activities have also been expanded across the country and into Canada.

Currently the company is involved in a 20-story luxury cooperative apartment in New York City and the Los Angeles skyscraper.

Expansion overseas? "It's possible," says Norman Tishman.

• **A switch in financing**—With the postwar building boom, the Tishmans devised a new method of financing their projects—the sales-leaseback procedure. Under this system they are able to obtain regular income with a minimum of investment.

After erecting a structure, the Tishmans sell it outright, usually to an institution. Then they lease it back under a long-term arrangement. They pay an annual rent, and operate the building. Renting releases Tishman capital for other projects; and money paid in rent is tax deductible.

Leases normally run for 15 to 20 years. After that, the Tishmans continue to rent, but at reduced rates.

The institutional buyer makes money too. With annual rents at 7% of the original investment, his money is recouped in about 20 years. Future rents represent a clear and secure profit.

• **A family company**—Tishman is principally a family owned and operated concern. Eight relatives hold key positions in the firm and the family controls 46% of the stock. It is listed on the New York Stock Exchange with over 1.9 million shares of common stock and over 113,000 shares of preferred stock.

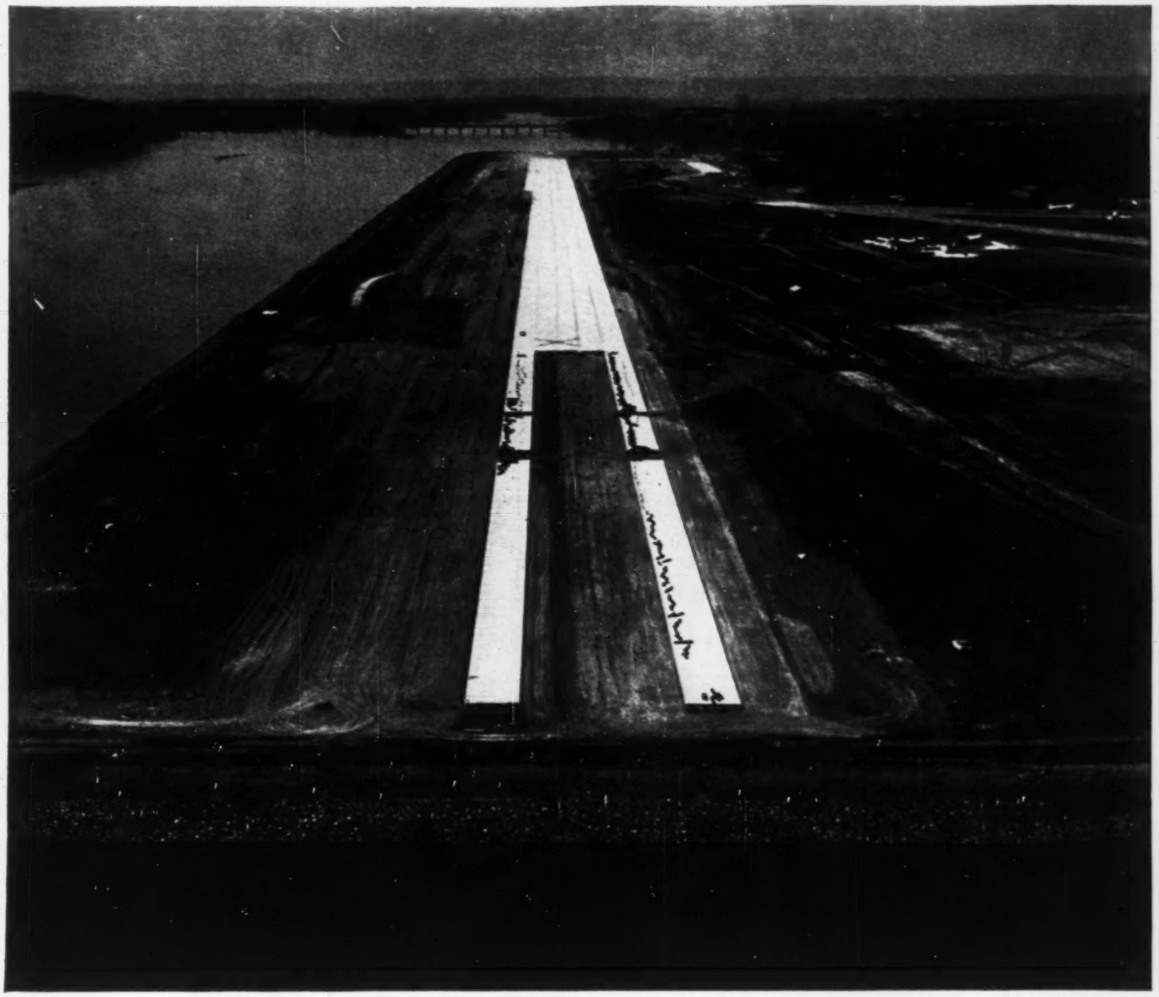
When the Tishman firm became a publicly owned corporation in 1928, 400,000 shares of common stock constituted its entire capitalization. Twice in the past four years the stock has split two for one.

In 1958 the company netted $3.1 million as compared with the same amount for the first nine months of this year.

Building for the Tishmans is very much a family affair. The acquisition and financing of new property is under Norman, Robert and Peter Tishman. Once a site has been spotted, an architect is called in. Alexander Tishman, who is a registered architect, okays the final plans.

The construction department is under John Tishman, a civil engineer. Alan Tishman's renting division also steps in. Finally, Edward Tishman, a mechanical engineer, takes over with the management operation.

All the sons and grandsons of Julius Tishman have gone into building. Even at family gatherings the Tishmans talk construction. "If you want to say anything you've simply got to know construction," says Norman Tishman.



Two-mile-long airport runway in the Susquehanna River rests on a foundation of Bethlehem blast-furnace slag. Contractor: C. J. Langenfelder

Air Force Runway Built on Slag in Susquehanna River

Olmsted Air Force Base, Middletown, Pa., was unable to accommodate jet aircraft on its existing runways. Nor was there room for expansion—except in the Susquehanna River. The river proved to be the best location for a two-mile-long runway.

The twin problems of constructing a solid runway foundation, and a levee to protect the runway from high river water, were solved by using blast-furnace slag from an adjoining Bethlehem steel plant. The levee and runway foundation took 4 million cu yds of slag—one of the largest single uses of blast-furnace slag on record.

Construction of the runway base required an additional 1½ million cu yd. The amount of slag used for both jobs would fill a train of hopper cars 467 miles long.

Blast-furnace slag had two distinct advantages: when only six inches above water level, it consolidated to such a degree that 60-ton hauling units could operate over it. Secondly, because compaction of slag is little influenced by moisture, work could continue even after heavy rains.

In addition to the slag, Bethlehem supplied all the steel reinforcement used in the concrete pavement.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.
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BETHLEHEM STEEL

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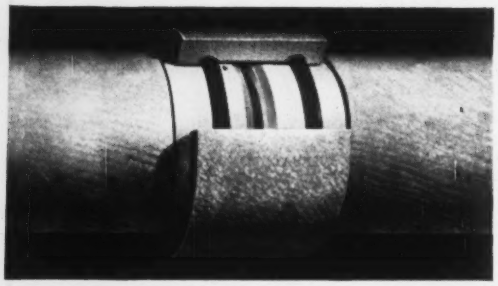
K&M ASBESTOS-CEMENT PRESSURE PIPE

its bore stays clean year after year



The finest coupling in the industry! Exclusive patented "K&M" FLUID-TITE Coupling connects in two easy steps. Seals tight and stays tight . . . no matter how high the pressure climbs. Sealing rings are self-energizing. No cumbersome coupling puller is required. And, a 5° deflection per coupling if you need it.

"K&M" Asbestos-Cement Pressure Pipe is as *modern* as the Jet Age in which we live. This tax-saver sends maintenance costs tumbling.

The bore remains smooth and clean . . . no clogging and no rusty discoloration of water . . . and pumping costs remain low. Being made of tough, high-tensile-strength asbestos fibers and portland cement, "K&M" Asbestos-Cement Pressure Pipe is practically indestructible. Won't corrode or tuberculate. And, it's completely immune to electrolysis. Joints are permanently, automatically root-tight and water-tight.

for uninterrupted, trouble-free service

"K&M" Asbestos-Cement Pressure Pipe is a thrifty pipe. Its low initial cost is often your last cost. Its lightweight reduces shipping and handling costs.

This thrift carries over into installation. You can install "K&M" Asbestos-Cement Pressure Pipe in practically all kinds of weather and soil conditions . . . with unskilled labor . . . and without heavy machinery. In fact, you can lay more pipe per hour than you've ever done before.

What makes "K&M" Asbestos-Cement Pressure Pipe so special? Eighty-five years of asbestos engineering by one of America's pioneers in asbestos products. Put this wealth of experience to work for you. Write to us today.

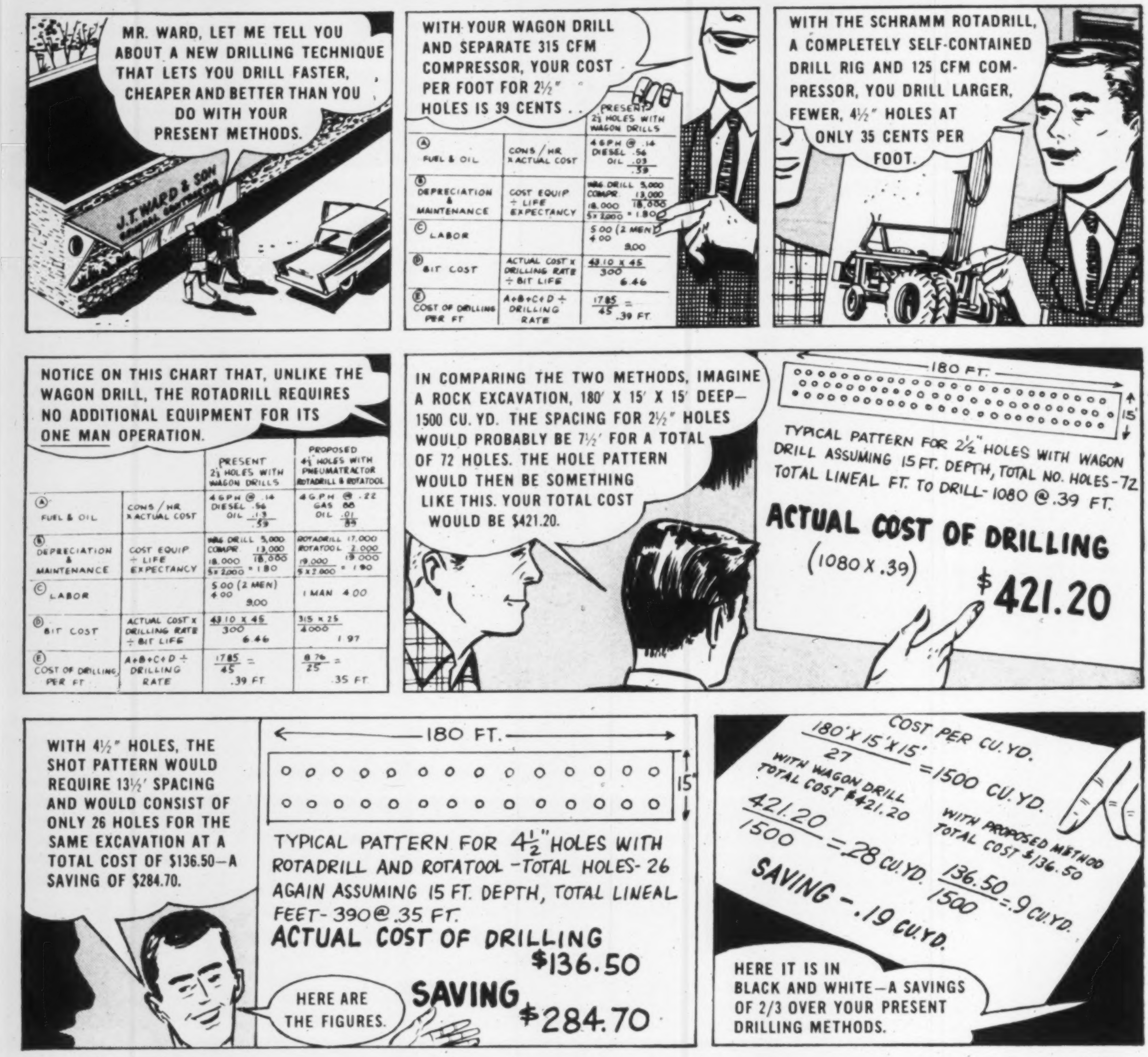
K•M
BEST IN ASBESTOS

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

CIRCLE 161 READER SERVICE CARD

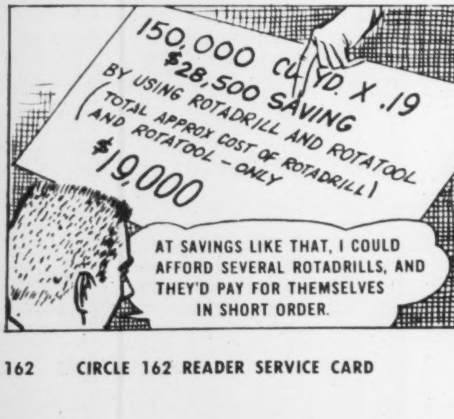
NEWEST, MOST MODERN DRILLING METHODS:

Save up to 2/3 on drilling costs!


MR. WARD, LET ME TELL YOU ABOUT A NEW DRILLING TECHNIQUE THAT LETS YOU DRILL FASTER, CHEAPER AND BETTER THAN YOU DO WITH YOUR PRESENT METHODS.
J.T. WARD & SON GENERAL CONTRACTOR
WITH YOUR WAGON DRILL AND SEPARATE 315 CFM COMPRESSOR, YOUR COST PER FOOT FOR 2½" HOLES IS 39 CENTS . .
WITH THE SCHRAMM ROTADRILL, A COMPLETELY SELF-CONTAINED DRILL RIG AND 125 CFM COMPRESSOR, YOU DRILL LARGER, FEWER, 4½" HOLES AT ONLY 35 CENTS PER FOOT.
NOTICE ON THIS CHART THAT, UNLIKE THE WAGON DRILL, THE ROTADRILL REQUIRES NO ADDITIONAL EQUIPMENT FOR ITS ONE MAN OPERATION.
IN COMPARING THE TWO METHODS, IMAGINE A ROCK EXCAVATION, 180' X 15' X 15' DEEP—1500 CU. YD. THE SPACING FOR 2½" HOLES WOULD PROBABLY BE 7½' FOR A TOTAL OF 72 HOLES. THE HOLE PATTERN WOULD THEN BE SOMETHING LIKE THIS. YOUR TOTAL COST WOULD BE $421.20.
180 FT.
15'
TYPICAL PATTERN FOR 2½" HOLES WITH WAGON DRILL ASSUMING 15 FT. DEPTH, TOTAL NO. HOLES-72 TOTAL LINEAL FT. TO DRILL-1080 @ .39 FT.
ACTUAL COST OF DRILLING (1080 X .39) $421.20
WITH 4½" HOLES, THE SHOT PATTERN WOULD REQUIRE 13½' SPACING AND WOULD CONSIST OF ONLY 26 HOLES FOR THE SAME EXCAVATION AT A TOTAL COST OF $136.50—A SAVING OF $284.70.
180 FT.
15'
TYPICAL PATTERN FOR 4½" HOLES WITH ROTADRILL AND ROTATOOL - TOTAL HOLES-26 AGAIN ASSUMING 15 FT. DEPTH, TOTAL LINEAL FEET-390 @ .35 FT.
ACTUAL COST OF DRILLING $136.50
HERE ARE THE FIGURES.
SAVING $284.70
COST PER CU. YD.
180' X 15' X 15' / 27 = 1500 CU. YD.
WITH WAGON DRILL TOTAL COST $421.20
421.20 / 1500 = .28 CU. YD.
WITH PROPOSED METHOD TOTAL COST $136.50
136.50 / 1500 = .9 CU. YD.
SAVING - .19 CU. YD.
HERE IT IS IN BLACK AND WHITE—A SAVINGS OF 2/3 OVER YOUR PRESENT DRILLING METHODS.

		PRESENT 2½ HOLES WITH WAGON DRILLS
Ⓐ FUEL & OIL	CONS / HR X ACTUAL COST	4 GPH @ .14 DIESEL .56 OIL .03 .59
Ⓑ DEPRECIATION & MAINTENANCE	COST EQUIP ÷ LIFE EXPECTANCY	WAG DRILL 5,000 COMPR 13,000 18,000 18,000 / 5×2,000 = 1.80
Ⓒ LABOR		5.00 (2 MEN) 4.00 9.00
Ⓓ BIT COST	ACTUAL COST X DRILLING RATE ÷ BIT LIFE	43.10 X 45 / 300 6.46
Ⓔ COST OF DRILLING PER FT	A+B+C+D ÷ DRILLING RATE	17.85 / 45 = .39 FT.

		PRESENT 2½ HOLES WITH WAGON DRILLS	PROPOSED 4½ HOLES WITH PNEUMATRACTOR ROTADRILL & ROTATOOL
Ⓐ FUEL & OIL	CONS / HR X ACTUAL COST	4 GPH @ .14 DIESEL .56 OIL .13 .59	4 GPH @ .22 GAS 88 OIL .01 89
Ⓑ DEPRECIATION & MAINTENANCE	COST EQUIP ÷ LIFE EXPECTANCY	WAG DRILL 5,000 COMPR 13,000 18,000 18,000 / 5×2000 = 1.80	ROTADRILL 17,000 ROTATOOL 2,000 19,000 19,000 / 5×2,000 = 1.90
Ⓒ LABOR		5.00 (2 MEN) 4.00 9.00	1 MAN 4.00
Ⓓ BIT COST	ACTUAL COST X DRILLING RATE ÷ BIT LIFE	43.10 X 45 / 300 6.46	315 X 25 / 4000 1.97
Ⓔ COST OF DRILLING PER FT	A+B+C+D ÷ DRILLING RATE	17.85 / 45 = .39 FT	8.76 / 25 = .35 FT


150,000 CU. YD. X .19
$28,500 SAVING
BY USING ROTADRILL AND ROTATOOL
(TOTAL APPROX COST OF ROTADRILL AND ROTATOOL - ONLY
$19,000
AT SAVINGS LIKE THAT, I COULD AFFORD SEVERAL ROTADRILLS, AND THEY'D PAY FOR THEMSELVES IN SHORT ORDER.

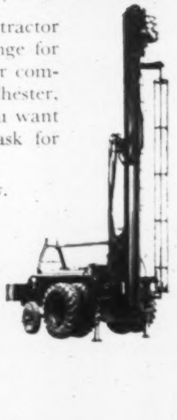
Want to see more? Let us show you the Pneumatractor Mounted Rotadrill in action! Act now to arrange for your own personal demonstration. Write on your company letterhead to SCHRAMM, INC., West Chester, Pa., and we'll set up a date with you. Or, if you want more information before your demonstration, ask for Bulletin DM58-4.

Your local Schramm dealer is listed in the Yellow Pages.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. • West Chester, Pa.



CIRCLE 162 READER SERVICE CARD

Men and Jobs

Three New Executives For Abbott, Merkt & Co.

Two engineers and an architect are among the top executives recently named by Abbott, Merkt & Co., New York City engineers and designers.

Richard O. Walker, Jr., has been appointed vice president; Richard J. Bush has been elected to the board of directors; and J. Stanley Nants, Jr., has been selected to head the firm's architectural division.

Mr. Walker, who has been with the company for eleven years, directed the design and construction of the Garden State Plaza Shopping Center in Paramus, N. J., reputed to be the largest shopping center in the East. Elected secretary in 1957, he will combine these duties with his new ones.

Mr. Bush joined the firm in 1946 and has been director of the mechanical division.

As architectural designer, Mr. Nants has supervised many projects in the U. S. He joined the company in 1949.

W. H. Correale Joins Builder After NYC Post

William H. Correale, retired Superintendent of Design and Construction of school buildings for the New York City Board of Education, has joined the Depot Construction Co., Long Island City, N. Y., as executive vice president.

The firm is active in general construction and over a 35-year period has completed office buildings, hospitals, schools and other public buildings.

Mr. Correale graduated from Massachusetts Institute of Technology in 1924. In addition to engineering work with Moran, Proctor, Mueser & Rutledge, he was an officer in the Corps of Engineers during World War II.

Before joining the Board of Education he was First Deputy Commissioner of New York City's Department of Water Supply, Gas and Electricity.

Careers

Business

Taylor-Metropolitan Construction Corp., a New York subsidiary of Taylor International Corp., largest builder of luxury hotels, merged with the parent company.

John D. Kirkwood, civil engineer, is general manager of sales for Republic Steel Corp's Truscon Division, Youngstown, Ohio. He has been with the company for 20 years.

Stone & Webster Engineering Corp., Boston and New York City, has elected four new vice presidents. They are **Harold F. Cleary** and **Donald N. McCord**, construction managers; **M. H. Cutler**, engineering manager; **William R. Prang**, west coast district manager.

With the merger comes the appointment of two new vice presidents. **Gerald M. Chanin**, who headed the New York subsidiary, has been appointed vice president in charge of the New York office. He was formerly a design and construction executive for Intercontinental Hotels Corp.

S. C. Davis, formerly with Taylor's Miami Office, has been named a vice president in charge of the Los Angeles division.

M. C. Patton has been elected chairman of the board of Armco Drainage & Metal Products, Inc., Middletown, Ohio, after serving as executive vice president. Taking over as vice president of sales is **Warren S. Mann** who had been manager of the company's Dixie division in Atlanta.

A. E. Somerville is vice president in charge of construction for Arthur G. McKee & Co., designers and builders for the steel, petroleum and chemical industries. Since 1957 he has been general construction manager.

Edward Sturm and **Willis H. Brett** have formed the partnership, Sturm & Brett Engineers, Inc., Chicago. They will specialize in design project work for the chemical, fertilizer, food, concrete and aggregate industries.

John G. Lewis is manager of the Pacific Coast offices of Ford, Bacon & Davis, Inc., New York City engineers and business consultants.

Hugh Mullen has been appointed vice president in charge of operations for Buell Engineering Co., Inc., designers and manufacturers of air pollution and dust control equipment. With the company for 13 years, he was formerly director of purchasing and administrative assistant to the president.

John T. McCall is assistant director of research and development for the Lock Joint Pipe Co., East Orange, N. J. An active teacher, author and industrial consultant, Mr. McCall has been an associated professor of applied mechanics at Michigan State University.

James D. Kissell and **Marvin L. Garber** are new partners with Fulton & Cramer, Consulting Engineers, Lincoln, Neb.

Aurnhammer, Jeske & Aurnhammer, consulting engineers, have opened new offices at Summit, New Jersey.

(*Men and Jobs continued p. 164*)

NOW...
CUT PLYWOOD FORM COSTS
WITH THOMPSON'S WATER SEAL

Thompson's
WATER SEAL
E. A. THOMPSON CO., INC.

Note these cost-saving features:

- Prevents absorption of water in concrete forms. Forms last longer.
- Saves labor. Eliminates cost of cleaning, sanding and recoating after each pour.
- Thompson's Water Seal permits eight or more pours per plywood form (min. 4 pours per side).
- Eliminates form damage during stripping. Forms can't stick. Won't soften wood, prevents deflection.
- Easy to apply by brushing, dipping or spraying.

Thompson's Water Seal is deep penetrating, colorless, leaves no residue, won't stain concrete; surface is dust-free, ready for painting.

Available in 5 and 55 gallon drums from suppliers to the construction industry.

See catalog in Sweets Architectural file and Light Construction file.

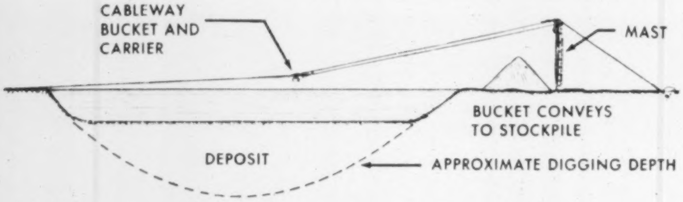
Thompson's
MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929
E. A. Thompson Co., Inc., Merchandise Mart, San Francisco 3, California

San Francisco, Los Angeles, San Diego, Portland, Chicago, Seattle, Denver, Dallas, Houston, St. Louis, St. Paul, Detroit, Philadelphia, New York City, Memphis, Tampa, Cleveland, Atlanta, Honolulu. Factory: King City, Calif. 5647R

CIRCLE 163 READER SERVICE CARD

The Best Method for Digging Under Water is a Sauerman Slackline Cableway

. . . R. W. Bisett, Pres., Olean Gravel, Inc.



CABLEWAY BUCKET AND CARRIER
MAST
BUCKET CONVEYS TO STOCKPILE
DEPOSIT
APPROXIMATE DIGGING DEPTH

A Sauerman Slackline Cableway has been excavating material for Olean Gravel, Inc. since 1930. The 1½-yd. bucket has an operating span of 1200 ft., with an average haul of 900 ft. Depth of the pit is approximately 85 ft.

Due to the long haul and digging depth, Olean uses shovels at the shore line to supplement the Slackline and maintain the 200-tph. capacity of their new plant. Mr. R. W. Bisett, President, states:

"No one has yet come up with a better way of getting material from below the water line than Sauerman."

During freezing winter months when the plant is not operating, the Slackline Cableway is kept running to build a stockpile of material. A 110-ft. mast permits building the pile to a height of about 75 ft. All digging, elevating, conveying and dumping operations are handled by the hoist operator. Gravity return of the bucket to the excavation completes the fast operating cycle.

Where long range excavation or deep digging is required, it pays to use a Slackline Cableway. Contact Sauerman for specific recommendations on your job. Catalog C, *Slackline Cableways*, gives more information on this materials handling method.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.
LInden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

Paul A. Harlamert joins Jones, Henry & Williams, Toledo consulting engineers, as a partner.

Three Chicago structural engineers, **Donald E. Anderson, Kenneth C. Naslund** and **Jack R. Janney** have launched a new structural engineering consulting service, The Engineers Collaborative, Chicago. They will specialize in thin-shell structures, precast and prestressed concrete construction, vibration analysis, and soil and foundation analysis.

W. F. Farnham and **O. F. Sorgenfei** have been named partners of Modjeski and Masters, Harrisburg, Pa., consulting engineers. Appointed senior associate is **Tien A. Koe,** who has been with the firm since 1927. Promoted to associates, after ten years' service, are **T. R. Kealy, R. D. Dutton, R. E. Felsburg** and **F. M. Masters, Jr.**

J. E. Kunkler is vice president of Armco Drainage & Metal Products, Inc., a subsidiary of Armco Steel Corp., Middletown, Ohio. A member of the firm since 1941, he has been central division manager for the past year.

B. E. Payne, chief engineer for the Louisville Water Co., will also serve as general manager, directing the company's daily operations. He joined the firm in 1925 and was promoted to the chief engineer position in 1941.

Joseph S. Myers and **Harry W. Powell** have been elected vice presidents of Merritt-Chapman & Scott Corp., New York City. Both are former assistant vice presidents. Mr. Myers, who is connected with the construction department, is responsible for all overseas projects. Mr. Powell will oversee all purchasing for the construction department, marine salvage division and derrick division.

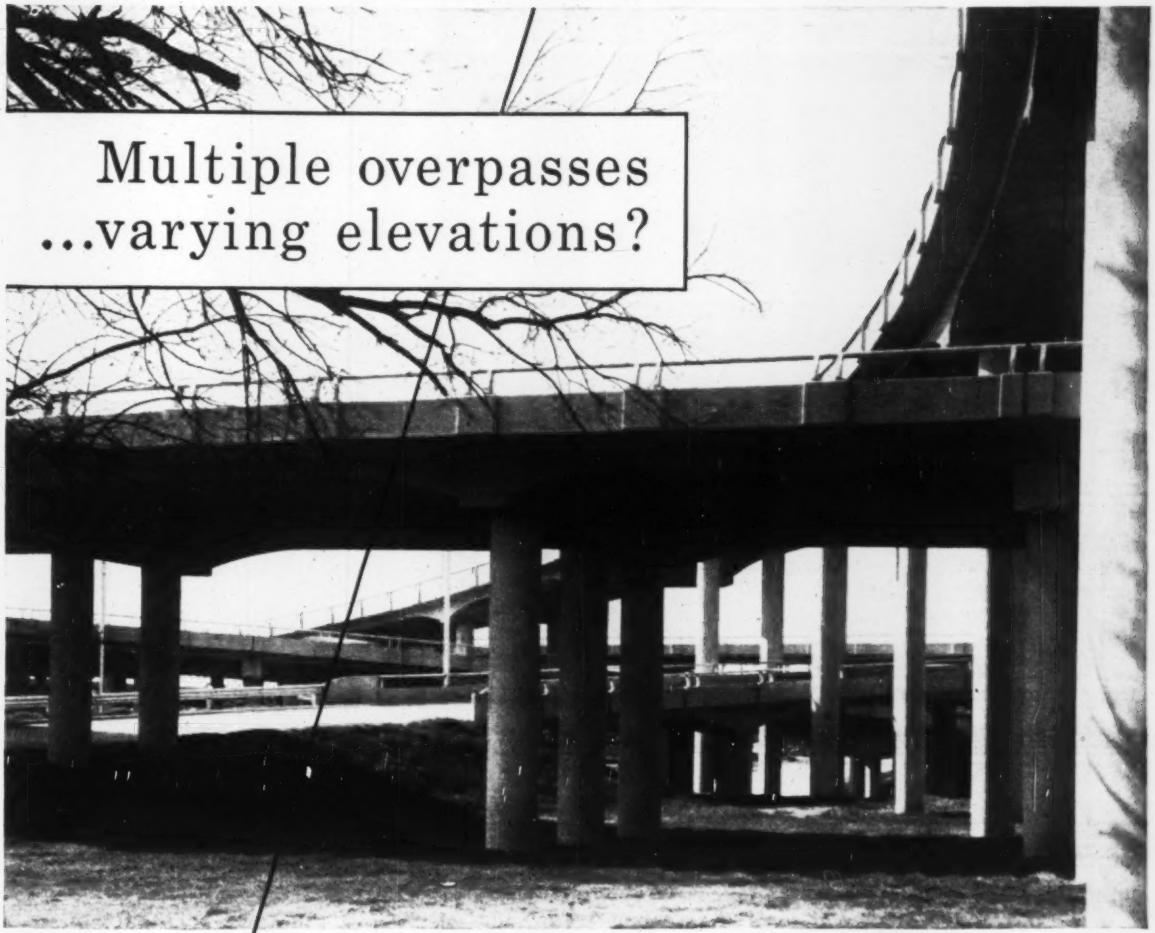
Walter M. Hassenplug is executive vice president of Acme Industries, Inc., Jackson, Mich., manufacturers of refrigeration and air conditioning systems. He will handle the company's manufacturing, engineering, personnel and purchasing.

A new construction product company is the **Plastic Sealer Corp.**, Columbus, Ohio. **Fred W. Legg,** president of Legg & Davis, Inc., Columbus, is chairman of the board, and **Floyd H. Baker** is president.

Walter R. Cook is general manager of the newly created Dallas division of Texas Industries, Inc. He will continue as vice president of the corporation and will assist in managing the Eastland, and Fort Worth, plants.

Robert H. McKay has become a partner in the architectural firm of Alfred Easton Poor, New York City. He has been general manager of the company's New York City offices.

(*Men and Jobs continued p. 166*)


Multiple overpasses
...varying elevations?

Designer: Bridge Section, Fort Worth District, Texas Highway Department
Contractors: Austin Bridge Company, Dallas; and Worth Construction Company, Fort Worth

REINFORCED CONCRETE

...the solution to your

Intricate Design Problems

Modern highway interchanges and multiple overpasses with varying elevations often call for the most intricate designs, which can best be achieved with reinforced concrete.

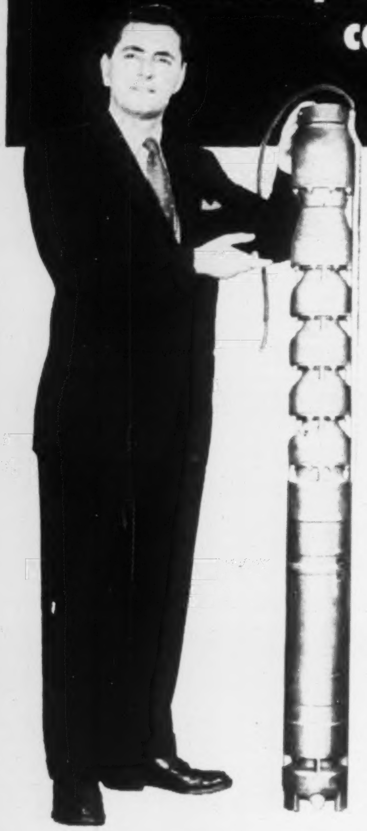
Whether your bridge design problem is complicated or simple, reinforced concrete is the logical, economical solution. It provides a construction material of unusual flexibility and durability. All construction material is obtainable from local stocks, and local labor is readily available for an immediate start. Furthermore, should field changes become necessary, *they can be made with little delay!*

On your next bridge or multiple overpass, design for beauty plus economy . . . and stay on schedule . . . with reinforced concrete.

CONCRETE
REINFORCING
STEEL INSTITUTE
C.R.S.I.
FOUNDED
1924

CONCRETE REINFORCING STEEL INSTITUTE
38 South Dearborn Street • Chicago, Illinois

Here's the modern way to meet municipal, industrial and commercial water supply needs



SUMO SUBMERSIBLE PUMPS

It's being proved in installations all over the country. The trend is to Sumo Submersibles as the modern, efficient means of meeting large scale water requirements.

Installed completely *inside* the well, a single Sumo Submersible pump will provide up to 2000 gpm. Installation is neat and simple . . . no pump house or enclosure is necessary. Operation is noiseless and troublefree. Maintenance is at a minimum.

Sumo pumps incorporate the best features of submersible pump design which has been developed by almost half a century of experience in the manufacture and application of submersible pumps in thousands of different installations throughout the world.

For any large scale water need, be sure to specify SUMO submersibles . . . the modern way to pump. For information,

WRITE FOR BULLETIN B-1000

The advice and help of Sumo's expert engineering staff is always available without obligation.

Dept 2

Pumping Dirty Water?
SUMO DRAINER PUMPS
Are the Answer.

These rugged, dependable, heavy duty 7½ hp electric submersibles are ideal for drainage work, dewatering, flooding or general pumping service. Handles water with 20% solids. Bulletin B-1100 has details. Send for a copy.

SUMO PUMPS INC.
P.O. Box 983 Stamford, Conn.
Sales Representatives in Principal Cities

CIRCLE 166 READER SERVICE CARD

Public Works

Joseph J. Lawler has been elected chairman of the Pennsylvania Turnpike Commission, a $15,000 a year position. He has been a member of the commission for two years and is former secretary of the highway department.

Joseph C. Webber is chief engineer of Toledo's water works division.

Col. Robert R. Robertson takes over as commanding officer for the Army Map Service, Washington, D. C. He has done extensive topographic work in Alaska and Latin America and was director of the Inter-American Geodetic Survey for three years.

John V. Lewis has been appointed Commissioner of Public Works for Rochester, N. Y. He has been with the department for 35 years.

George P. Palo, former chief engineer for the TVA, has been promoted to chief engineer. With the Authority since 1934, he served for several years in the design division.

Capt. George A. Nowak has been assigned area engineer, Fort Peck, Mont., for the Corps of Engineers.

Walter F. Emmons takes over as chief design engineer for the TVA. He had been assistant chief design engineer.

Col. Charles M. Duke, U. S. Army Corps of Engineers, has been assigned as New York district engineer.

A. Norman Murray, former assistant regional director, has been appointed chief engineer and general manager of the California Reclamation Board.

Matthew J. Kulick has been appointed deputy public works director of Rhode Island. He was formerly a project engineer with the Corps of Engineers, New England division.

Harold A. Kidby is chief of rivers and harbors for the planning branch of Portland District Army Engineers.

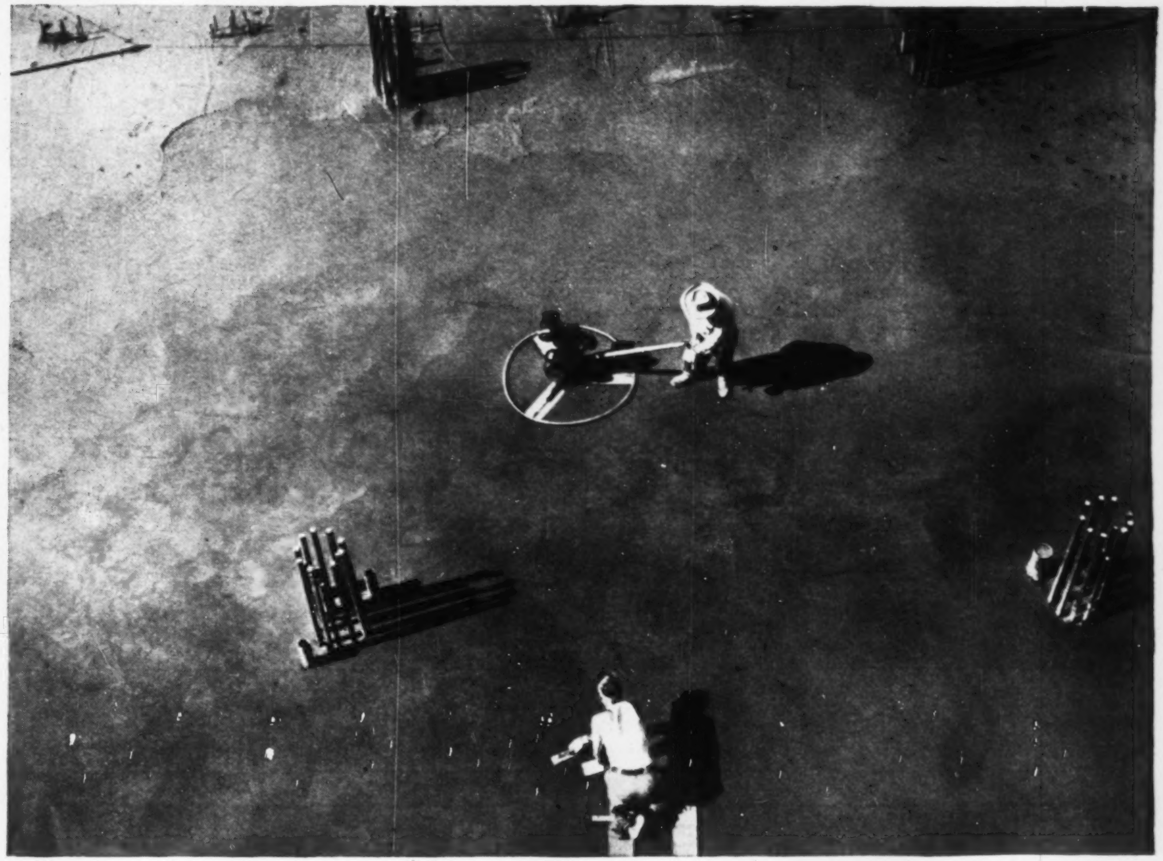
Jack Coss, assistant city manager at Raleigh, N. C., since 1957, has been appointed town manager of Louisburg, N. C.

James J. O'Donnell heads Maryland's newly formed department of planning. He had served as director of the department of public improvements.

Walter W. Harper, formerly with North Carolina's department of conservation and development, has been appointed director of the South Carolina state development board, Columbia, S. C.

F. R. Oliver is Arkansas's state highway director at an annual salary of $16,000. He has been with the bureau of public roads since 1939 and has also acted as a special highway consultant in Iran.

(*Men and Jobs continued p. 170*)



WET MIX TO DURABLE CONCRETE WITH ONE SIMPLE TREATMENT

TRI-KOTE Concrete Treatments—based on Parlon® chlorinated rubber—seal, cure, and harden wet concrete in one application. TRI-KOTE treatments meet Corps of Engineers CRD-C-300, Bureau of Reclamation, and ASTM Specifications . . . provide moisture retention of 95-98% . . . give rainfall protection within 30 minutes . . . and eliminate the need for all other curing and hardening methods. TRI-KOTE not only stops spalling, flaking, and dusting; it also repels oils, greases, salts, and other chemicals; it gives long-lasting protection; and it takes paint readily.

Here's what typical users say:

"We have used many types as well as brands of concrete sealers and hardeners, some of which were very costly. We find TRI-KOTE is the best answer for all our jobs."—Building Contractor.

"Sun, rain, and salt were our big problems. We find your TRI-KOTE gives us the quickest concrete protection and eliminates much of our labor costs."—Highway Engineer.

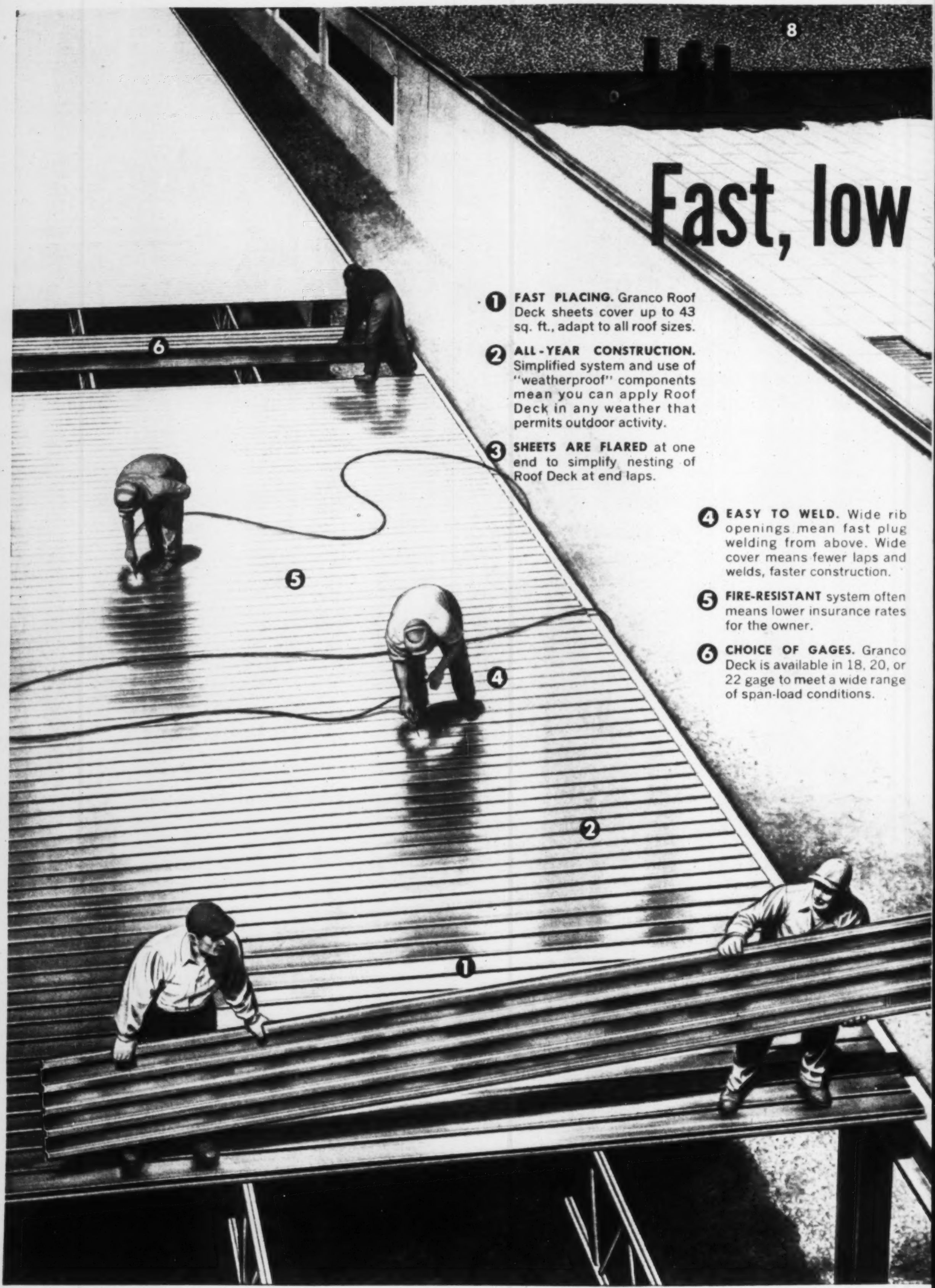
"Our concrete drives were spalling and pitting. We found no completely satisfactory method of preventing this until we used your TRI-KOTE. It gives the effect of a polished floor but is not slippery. There is no comparison in the time and effort in cleaning and maintaining a TRI-KOTE treated floor as against one not treated."—Construction & Maintenance Manager, Oil Company.

For information on TRI-KOTE, contact W. F. Macklin Company, Inc., 336 Taft Street, N. E., Minneapolis 13, Minnesota. Further information on Parlon, the alkali- and chemical-resistant film-former, can be obtained from:

Cellulose Products Department
HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington 99, Delaware

CR59-10

Fast, low



1. **FAST PLACING.** Granco Roof Deck sheets cover up to 43 sq. ft., adapt to all roof sizes.
2. **ALL-YEAR CONSTRUCTION.** Simplified system and use of "weatherproof" components mean you can apply Roof Deck in any weather that permits outdoor activity.
3. **SHEETS ARE FLARED** at one end to simplify nesting of Roof Deck at end laps.
4. **EASY TO WELD.** Wide rib openings mean fast plug welding from above. Wide cover means fewer laps and welds, faster construction.
5. **FIRE-RESISTANT** system often means lower insurance rates for the owner.
6. **CHOICE OF GAGES.** Granco Deck is available in 18, 20, or 22 gage to meet a wide range of span-load conditions.

❼ **INSULATION BOARD** is easy to apply over Granco Roof Deck sheets, speeds job completion.

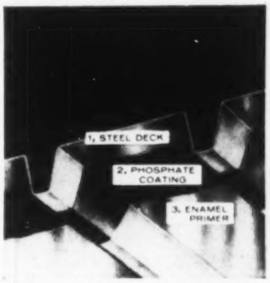
❽ **TWENTY-YEAR ROOF BONDS** are obtainable from roofing companies on Granco Deck with 1″ insulation board.

cost, year-round construction:

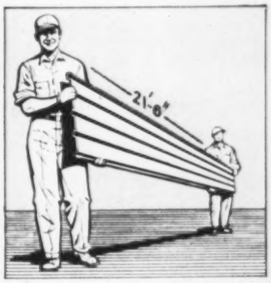
Granco Roof Deck

Granco Roof Deck often saves five to ten cents per square foot over heavier-type poured decks. Why? Because it's a *lightweight* system that saves on structural framing. Because construction is fast and easy. The entire system has only three components: Weld sheets into position . . . apply insulation board . . . add built-up roof.

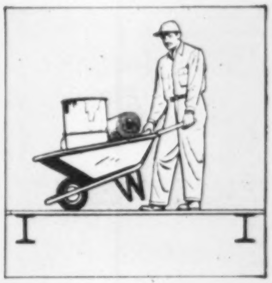
No wonder Granco Roof Deck is so widely used in commercial and industrial buildings. How about *your* next job? You can order Granco Roof Deck conveniently through more than 100 Granco distributors from coast to coast. Want more information? Simply fill out and mail the coupon, below.



TOUGH FINISH. Rust-preventive enamel is "flow coated" over steel, baked on at 350° F. for 20 minutes. Flint-hard finish prevents corrosion, resists abrasion from field handling.



LONG SHEETS. Lengths available up to 21½' long. Greater length makes possible continuous spans for stronger, lower-cost construction. You cover more area per sheet, finish jobs faster.



STRENGTH. Angular pattern with wide rib openings provides strong section properties. Granco Deck supports wheelbarrows, welding machines, etc., without bending or buckling.

GRANCO ROOF DECK

FROM THE GRANCO® FAMILY

FLOOR AND ROOF SYSTEMS FOR EVERY TYPE OF FRAMING

Granco Steel Products Co., 6506 N. Broadway, St. Louis 15, Missouri
A Subsidiary of GRANITE CITY STEEL COMPANY

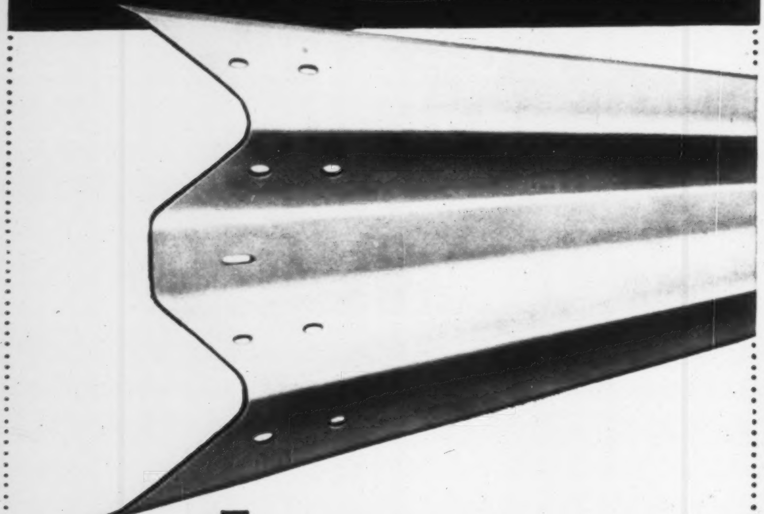
MAIL FOR FREE ROOF DECK MANUAL
Just sign coupon . . . clip to your company letterhead . . . mail today. Att'n: Dept. E-97.

NAME ____________________

Our catalogs are filed in Sweets!

CIRCLE 169 READER SERVICE CARD

U.S.F.



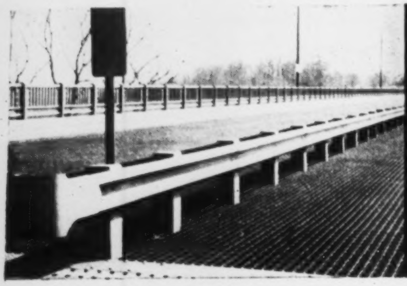
$$\frac{v+d+r+e}{\$}=S^{USF}$$

Formula for Guard Rail with all requisites suggests good visibility (v) high deflection (d) impact resistance (r) and engineered strength (e) at low cost — assured service life by specifying USF

GUARD RAIL

BARRIER BEAM OR UNIVERSAL BEAM

We'll send you complete details for your information . . . write to . . .



UNITED STEEL FABRICATORS, INC.
WOOSTER, OHIO
Corrugated Metal Pipe • Window Wells
Metal Doors & Frames • Metal Buildings
Highway Guard Rail • Bridge Flooring
Steel Forms for Concrete Bridge Decks

Retirements

John A. Stallings retired as safety engineer for Winston-Salem, N. C.

C. W. Pierce, who had been involved in $400 million worth of construction for the Duke Power Co., Charlotte, N. C., retired. He joined the company in 1923 and at the time of his retirement was project engineer.

James Blodgett has retired as manager of the Columbus, Ohio, Sewage Treatment Works to establish his own consulting engineer business.

Edwin R. Lang, chief of water development for the Wyoming Natural Resources Board, resigned.

Carroll E. Dobbin, geologist with the U. S. Geological Survey, retired after 41 years service.

Joe L. Greenlee, superintendent of the Charlotte, N. C., Water Department, resigned. He will take up duties as the assistant executive secretary of the North Carolina Local Government Employees Retirement System.

George J. Van Dorp resigned as chief engineer of the Toledo Water Department to become utilities manager of Cocoa, Fla. In his new position he will oversee water supply and sewage disposal for Cape Canaveral, Patrick Air Force Base, and surrounding areas. As water commissioner he directed a $10-million water system expansion project.

George A. Carter, director of Baltimore Public Works, retired after 36 years service.

Henry A. Yancey retired as city manager for Charlotte, N. C. He has also been city manager in Charlottesville, and Petersburg, Va., and Durham and Greensboro, N. C.

Horace Ramey, a veteran of 51 years, retired as chief engineer of the Metropolitan Sanitary District of Greater Chicago. He was the designer of a $330-million sewage treatment system for the city.

Carl E. Schwob retired as chief of the Public Health Service Division of water pollution control, Chevy Chase, Md.

Stuart R. Ives, president of Armco Drainage & Metal Products, Inc., retired after 42 years with the company.

Robert A. Monroe, chief design engineer for the TVA, retired. Among his projects were designs for hydroelectric and steam-generating stations totaling over 8 million kilowatts, and the new Wilson Lock.

John J. Hunt retired as sewerage engineer for Baltimore, a post he held for 12 years.

Harvey O. Loy, superintendent of Newark, Ohio, waterworks, resigned to become director of public utilities in Zanesville, Ohio.

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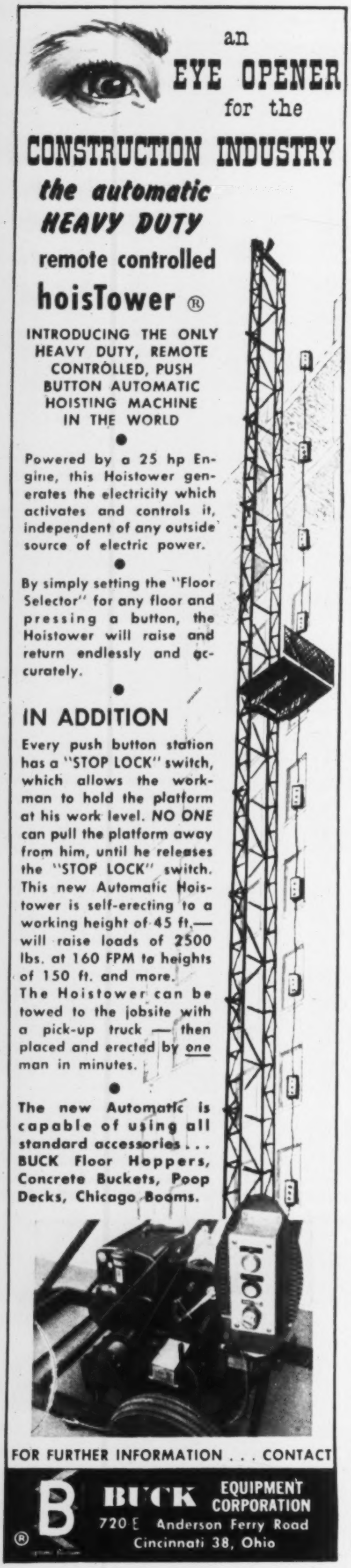
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CIRCLE 172 READER SERVICE CARD

Obituaries

Julian A. Dickinson Dies; Construction Executive

Julian A. Dickinson, 65, assistant vice president Merritt-Chapman & Scott's construction department, is dead.

He joined the New York City contracting firm in 1935 serving in various engineering positions until 1952, when he became affiliated with Raymond Concrete Pile Co., New York City. There he was president of the Raymond Concrete Pile Co., Ltd., and Raymond Concrete International Ltd., Canadian subsidiaries of the company.

In 1956 Mr. Dickinson rejoined Merritt-Chapman & Scott.

A 1915 graduate of Cornell University, he served with the Army Engineers in both world wars.

Edward A. Millar, Jr., 67, retired partner in the Cleveland engineering firm of John Paul Jones, Cary & Millar.

George F. Bateson, Sr., 72, retired sales manager of the Truscon Steel Division of Republic Steel Corp., Youngstown, Ohio. He had been with the company for 45 years.

Robert J. Dienst, 69, president and general manager of R. J. Dienst & Son, Contractors, Columbus, Ohio.

Albert E. S. Hall, 77, retired civil engineering consultant for the design division of DuPont Co. He had been with the company since 1918 and supervised much of the design work for the firm's commercial and defense plants.

Donald Roebling, 50, inventor of a World War II amphibious tank and grandson of the builder of the Brooklyn Bridge. He received the Medal of Merit in 1948 for his invention.

David R. Arnold, 70, retired structural engineer and bridge designer for the New York Central Railroad. He had also been associated with the Cleveland Union Terminals Co. and the Arthur G. McKee Co., Cleveland.

Henry C. Thompson, 60, associate professor of engineering graphics at Purdue University. He had taught at Purdue since 1935 and before that at the University of Colorado and the University of Iowa.

George F. Campbell, 67, Toronto road contractor who built part of the Alaska Highway. He also built the section of the Trans-Canada Highway north of Lake Superior.

Robert G. Brooks, 42, project superintendent for the J. A. Jones Construction Co., Durham, N. C., and the Chile Exploration Co., Chuquicamata, Chile. A construction man for 25 years, he had also been connected with the William Muirhead Construction Co., Durham.

Frederick D. Kessler, 73, contractor and Pennsylvania roadbuilder for 30 years. He had been constructing the first link of the Keystone Shortway.

Charles E. Walker, 75, engineering consultant. He had been town engineer for Brighton, N. Y., until his retirement in 1956.

William E. Martin, 77, owner of the U. S. Construction Co., Upper Sandusky, Ohio, and former engineer for Wyandot County.

Arthur W. Tews, 57, city engineer for St. Paul, Minn.

Irving H. Smallwood, 78, retired civil engineer for the New York State Department of Public Works.

Bernard S. Bush, 60, regional sanitary engineer for the Pennsylvania Department of Health for 31 years. He did extensive work with municipalities and industries on a water pollution abatement program.

Gordon Edson, 82, former assistant district engineer for the New York State Department of Public Works. He had also directed construction on parts of the State Barge Canal.

Jay W. Salisbury, 75, design engineer for the Scranton-Spring Brook Water Service Department, Scranton, Pa.

Heyward S. Singley, Columbia, S. C., architect.

Louis C. Kalb, 79, Atlanta contractor for more than 50 years.

Alfred Kauffmann, 79, former president of Link-Belt Co. and a director for 37 years. A mechanical engineer, he was also director of the Armour Research Foundation of the Illinois Institute of Technology.

Murray Erick, 65, senior partner in the Los Angeles architect firm, Murray Erick Associates. He designed buildings throughout the country, including the Beverly Hilton Hotel, the Southland Life Insurance Co. building, Dallas, and the Habana Hilton Hotel, Havana.

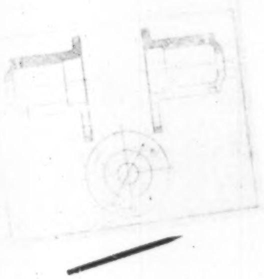
Some Ideas

for your file of practical information on drafting and reproduction from
KEUFFEL & ESSER CO.

A year of relentless testing has produced a small library of interesting facts about HERCULENE (T.M.) Drafting Film. What follows is a consensus of drafting-room experience with HERCULENE—by K&E and its customers—with some up-to-date recommendations for using it. Take the matter of . . .

Shiny Back vs. Pencil Back

A basic question is: do you need a double-surfaced drafting film? We make HERCULENE Drafting Film both ways, of course—with a single surface (shiny back) and double surface (pencil back). It's our recommendation that you use pencil back HERCULENE only if it's your practice to make basic drawings on one side, changes on the other. For most other uses, shiny back is preferable. (At first, the double-surface film was chosen by many drafting rooms because it lay flatter on the board than shiny back. This is no longer true. K&E research labs have come up with a fully effective anti-curl treatment.) Especially in filing, shiny back HERCULENE presents fewer problems. The clean non-abrasive back won't smudge the face of the sheet underneath, even in a heavy stack of tracings. If you'd like to compare a few sheets, please let us know.



Note sharp clear lines made by Duralar pencil on HERCULENE Drafting Film.

Plastic Pencils and the HERCULENE Surface

Not just a handy catch-phrase, when K&E puts its exclusive "engineered surface" on a drafting material, the result is an exact, uniform tooth for sharp pencil drawing, inking and typing. With HERCULENE Drafting Film, however, an entirely new type of plastic (non-graphite) pencil yields especially good results. Quite a few of our customers have reported favorably on the well-known Staedtler "Duralar" brand. Duralar pencils come in five hardnesses, are non-smudging and have generally good covering power, sharpness and erasability. After about 20 prints, the Duralar lines show up consistently better than those made by a regular pencil, since graphite lines tend to lose density.

Wet That Eraser!

The erasing qualities of HERCULENE Drafting Film are excellent, but (as with the pencils) we've discovered it's a new type of vinyl eraser that gives the best results. Examples of these non-rubber type erasers are the Richard Best "TAD" and the Eberhard Faber "RACE KLEEN"—both available from your K&E dealer. With vinyl erasers, pencil lines whisk off. Even stubborn ink and typing can be removed easily, with no damage to the surface. Here's a tip on how to do this:

Moisten the eraser slightly. It becomes no more abrasive, but a lot more "erasive." Moistening is a must when removing Duralar lines or typing after exposure to heat. (Incidentally, don't use electric erasing machines, steel erasers or typewriter erasers.) When erasing large areas, certain chemical eradicators work fine too. Our suggestion: use Vythene or a very light application of a denatured alcohol such as Solox, both of which can be applied with a cotton swab or clean cloth.

The Cleaner the Better

HERCULENE Drafting Film was designed for ink work, and its ink take is unexcelled. But like all films, its non-absorbency makes a few preparations advisable. The surface should be cleaned thoroughly before inking. Quickest and most effective way to do this is with the ABC Draftsman's Dry-Clean pad, which will remove finger marks and "traffic film" simply by rubbing the pad over the surface. Pouncing will also work well. A damp cloth is all right for general cleaning, but does not do the best job of preparing the surface for ink.

Inking over graphite pencil lines comes out best when done over light lines, drawn with a harder grade of pencil. A good way to remove excess graphite is to go over the drawing with an ABC pad. Inks vary in their usefulness on HERCULENE. We've tested several, and you're welcome to these results as well, on request.

After Typing, Please Pounce

Typed impressions on HERCULENE Drafting Film are crisp and sharp, but may take a while to dry because the film's surface doesn't "swallow" ink readily. A light pouncing right after typing will dry the ink and fix the lines—giving you uniform permanent contrast.

A new typewriter ribbon will produce the best impressions. At K&E we've tested a healthy variety of ribbons and we'd be pleased to send you the results on request.

Outstanding Advantages Proved in Tests

We're pleasantly amazed at the short time it took for HERCULENE Drafting Film to become an accepted "staple"—along with ALBANENE®, Tracing Paper and PHOENIX® Tracing Cloth. Actually, it's a rare drafting room by now that has *not* tested HERCULENE during its first year on the market. The findings: All properties considered, HERCULENE stands up better than any other drafting film. It has great resistance to heat, aging and abuse. Its exclusive "engineered surface" plus its tough, durable Mylar® base provide superior pencil and ink take, fine erasability, remarkable dimensional stability...a combination we're proud to call unbeatable!

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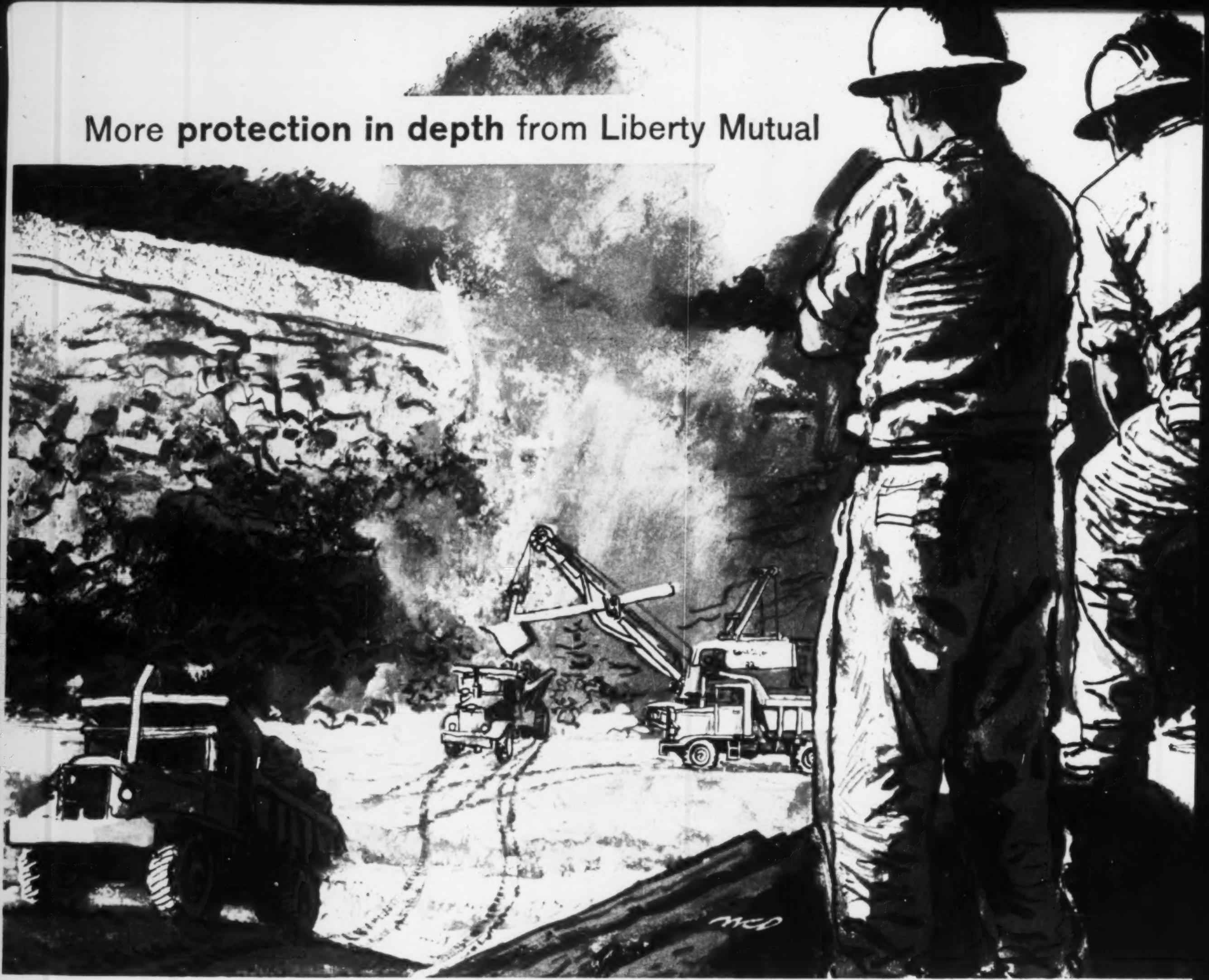

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Legal

Sub Unhurt By Surety's Deceit

Court allows estoppel against a surety who lulls a subcontractor into allowing his legal right to lapse.

A bonding company, which misled a subcontractor into allowing his lien against the contractor to lapse, was estopped from using this lapse as a defense when the subcontractor later sought recovery under the payment bond.

Dan-Bar Contracting Co., Inc., received contracts for construction work on several New York State highways. It gave the state a bond to guarantee prompt payment to persons supplying labor and materials on the work. One of Dan-Bar's subcontractors was Triple Cities Construction Co.

In September, 1953, the subcontractor filed a lien with the state against Dan-Bar for more than $60,000. Under the New York Lien Law, a lien becomes ineffective if no action to foreclose it is taken within 60 days, unless a court extends that period.

Two weeks after filing the lien, the subcontractor's attorneys wrote to Dan-Bar's bonding company—Maryland Casualty Co.—calling its attention to Dan-Bar's payment bond and to Dan-Bar's debt to Triple Cities. (The lien was actually worthless because of other liens and a prior assignment by Dan-Bar in excess of the amount due Dan-Bar from the state.) Some time later, the subcontractor's attorneys sent a bill to Dan-Bar, with a copy to Maryland, and threatened to sue both Dan-Bar and Maryland if the bill wasn't paid.

Dan-Bar's attorneys suggested there was a discrepancy in the bill, and requested an itemized statement. They expressed a willingness to discuss the bill and make payment when Dan-Bar was paid by the state.

The subcontractors' lawyers furnished the requested statement. When a month passed with no word from Dan-Bar, Triple Cities sued Dan-Bar on its contract and Maryland Casualty on its payment bond.

Dan-Bar's attorneys, appearing for both defendants, suggested a conference—later postponed by them—to settle the dispute. When the conference was finally held, Dan-Bar's lawyer said the only dispute was over a relatively small item of excavation yardage. Prompt payment was promised, as soon as this was checked. The matter was then delayed by excuses from Dan-Bar's attorney until the lien expired.

Nine days later, the defendants' attorney wrote that "they were unable to raise any funds." He said that, as Maryland had previously suggested, they would move for dismissal of Triple Cities' complaint on the ground that "once a lien was filed, a direct contract action was precluded," the only action maintainable being a "lien foreclosure" suit. Moreover, the attorneys expressly acknowledged that their failure to move for dismissal earlier "was not an oversight."

Maryland Casualty then moved for dismissal, contending that Triple Cities failed to perfect and foreclose its lien against Dan-Bar, a prerequisite to suing on the bond.

The trial court ruled in favor of Triple Cities, but the Appellate Division reversed the decision. The Appellate Division, in turn, was reversed by the New York Court of Appeals, which ordered a new trial.[1] It held that the bonding company, by its conduct, was estopped from claiming as a defense the failure to foreclose the lien.

The Court of Appeals, citing previous cases, noted that an estoppel rests upon the word or deed of one party upon which another rightfully relies and, so relying, changes his position to his injury. A party may not, even innocently, mislead an opponent and then claim the benefit of the deception, said the court. Moreover, as happened in this case, an estoppel is permitted where one party resorted to settlement negotiations, intending to lull the other party into inactivity until the time expired when he could take legal action.

(1) Triple Cities Construction Co v. Maryland Casualty Co., 4 N.Y. 2d 443, 151 N.E. 2d 856, New York Court of Appeals, June 25, 1958.

A Subcontractor Is Liable For His Own Negligence

A subcontractor cannot escape liability for his negligence, even though the contractor may also be sued for damages by a third party.

Bowyer & Johnson Construction Co. received a contract for highway construction. It subcontracted some grubbing and clearing work to Cordova Sand & Gravel Co.

(*Legal continued p.* 178)

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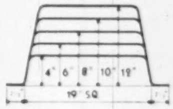

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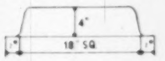

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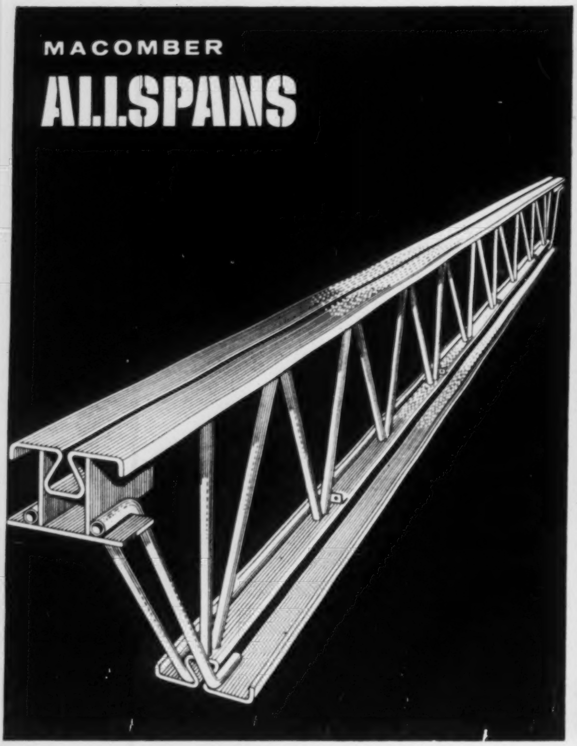

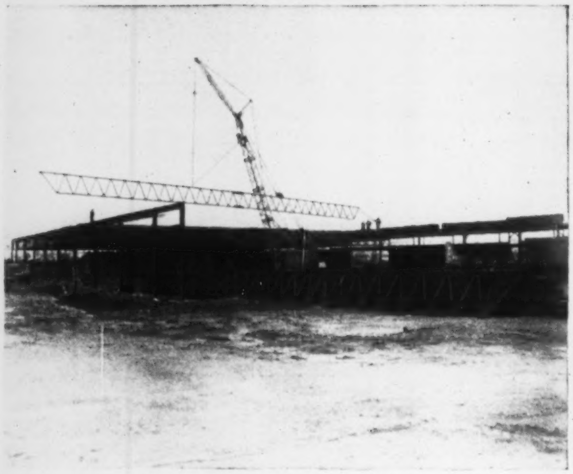
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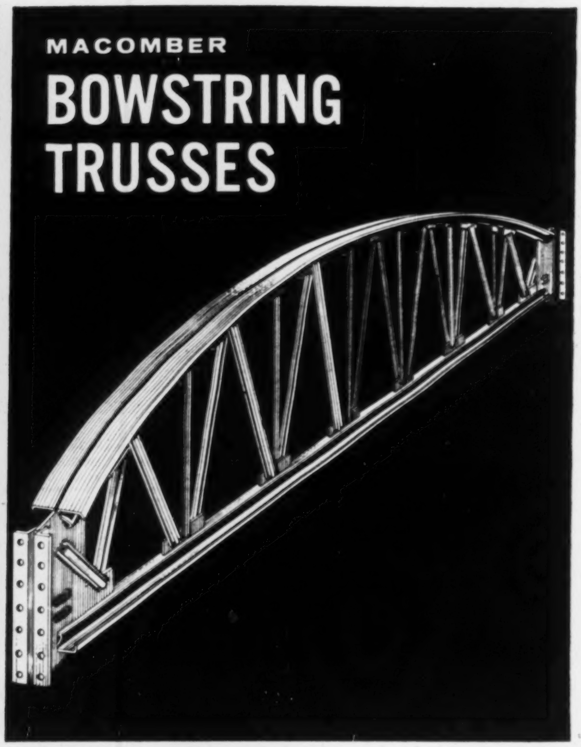

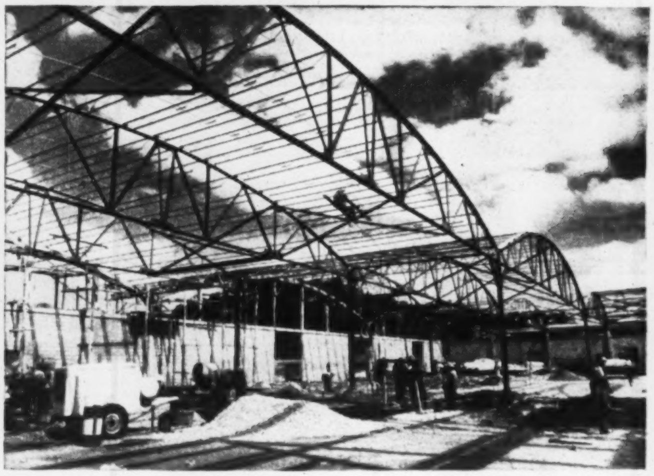
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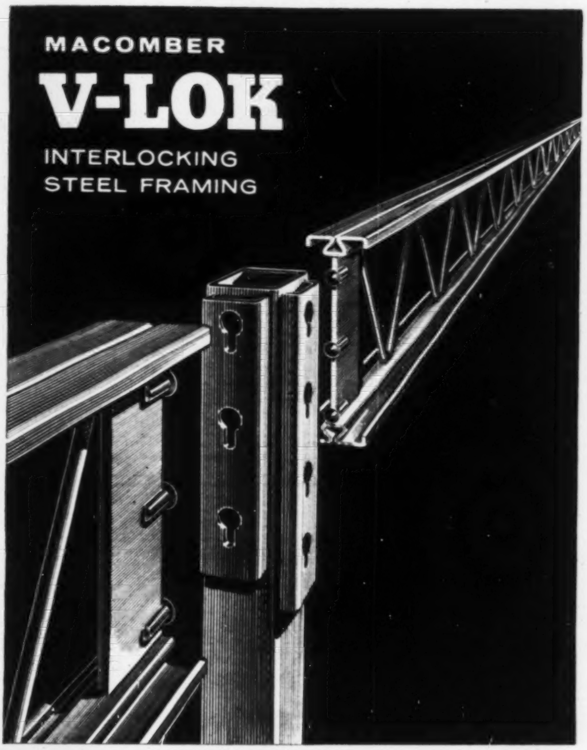
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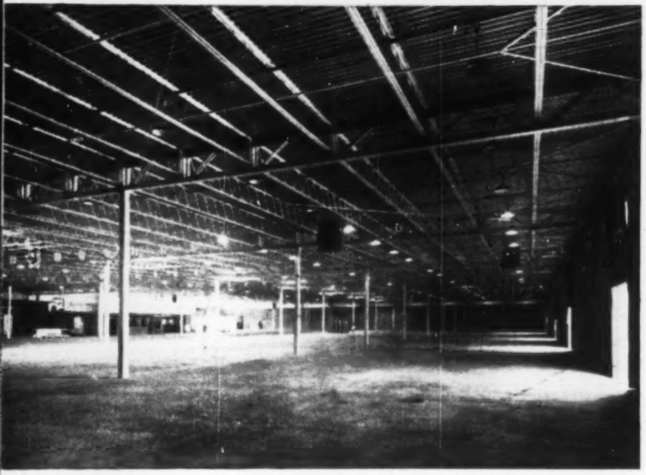

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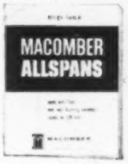
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CIRCLE 177 READER SERVICE CARD

Cordova, while burning trash and grub, started a fire that destroyed a church. The church sued both contractor and subcontractor for damages. The trial court awarded a judgment against both defendants, whereupon Bowyer & Johnson appealed the decision.[1] The appellate court maintained the judgment against Cordova, but dismissed it against Bowyer & Johnson.

Neither B&J nor Cordova denied the church's right to recover damages. But Cordova argued that, in its contract, B&J agreed to assume responsibility for all loss or damage arising from the nature of the work. In reply, the appellate court stated: "This clause does not impose upon contractor any greater liability for the acts of a subcontractor than would be imposed upon it (the contractor) directly. Clearly this clause was not intended to be the imposition of an absolute liability on contractor for injuries and damages sustained by members of the public regardless of negligence. This undertaking is between the county and contractor alone."

Cordova also claimed that B&J was liable because the work was inherently dangerous and B&J could not relieve its liability by subcontracting the work. But the appelate court ruled that the work was not inherently dangerous and, further, that Cordova had not proved that his method of using fire in grubbing and clearing was necessary.

The court also said that the subcontractor is not excused from exercising due care in performing the work. Nor can he push the liability upon the contractor, simply because a third party may sue the contractor directly, the court added. "The subcontractor impliedly agreed to perform in a workmanlike and prudent manner, . . . free from negligence. If it has failed, as the court's findings have established, it would have to make good the loss, if any, thereby imposed on the contractor."

(1) Bowyer & Johnson Construction Co. v. White, 255 F. 2d 482, United States Court of Appeals, Fifth Circuit, May 13, 1958.

Damages Are Not A Penalty

Court rules damages for breach of contract must reimburse injured party, not penalize defendant.

Courts will not enforce a contract provision for liquidated damages if the amount set in the contract is a penalty rather than the actual damages suffered.

In a breach of contract, the injured must make a reasonable effort to mitigate his damages. At any rate, in contracts where the specific label "liquidated damages" is used, the court will take this into account in determining the intent of the parties.

In a recent Illinois case, one party rented four trucks from another, with an option to buy the trucks. The lessee agreed to pay $5,400 rental for each truck, at the rate of $150 per month. The contract also contained an option to buy the equipment for $400 at the end of the lease, if the total rental had been paid. However, if lessee defaulted in payments, the contract gave lessor the right to end the contract and collect rental that would have been due for full life of contract.

When the lessee defaulted, the lessor repossessed the trucks and sued for the full rental called for in the contract. The trial court granted a judgment in favor of the lessor but the appellate court reversed it.[1]

"The appeals court held that the damages granted were a penalty rather than the actual damages sustained." It said that the lessor, having repossessed the trucks, had an opportunity to rent them again and so reduce his damages.

Citing from another Illinois case,[2] the appellate court stated: "This court has said more than once that no branch of the law is involved in more obscurity by contradictory decisions than whether a sum specified in an agreement to secure performance will be treated as liquidated damages or a penalty, and that each case must depend upon its own peculiar and attendant circumstances, and that therefore general rules of law on this subject are often of very little practical utility. While the intention of the parties must be taken into consideration, the language of the contract is not conclusive. The courts of this state, as well as in other jurisdictions, lean toward a construction which excludes the idea of liquidated damages and permits the parties to recover only the damages actually sustained."

The appellate court noted that some authorities uphold a conditional sales contracts in which the parties agree that, upon default by the vendee, the vendor may repossess the equipment and recover the unpaid balance as liquidated damages.

In each of these cases cited by the court, the term "liquidated damages" was used in the contract. But, in Illinois, even the term "liquidated dam-

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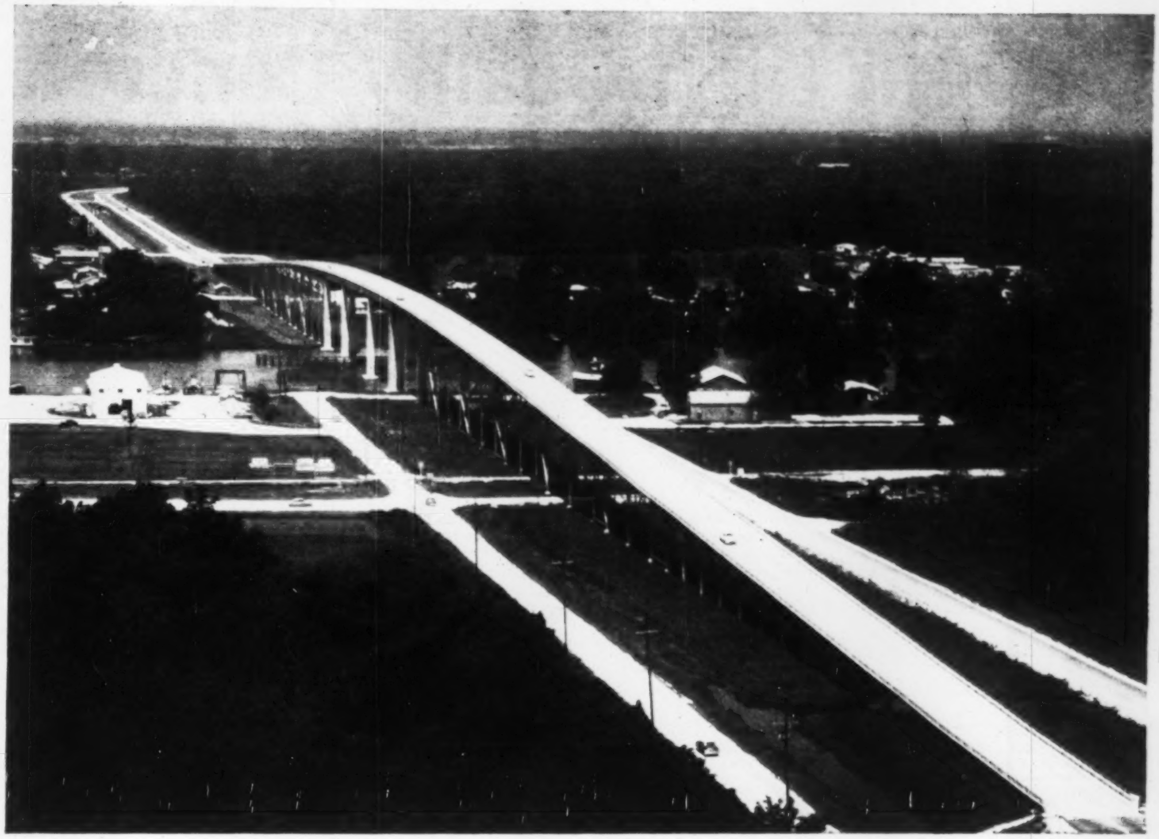

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VIBRATION & NOISE CONTROL NEWS

FROM THE APPLICATION ENGINEERING DEPARTMENT OF THE KORFUND COMPANY, INC.

RESILIENT MOUNTING CUTS COSTS, SIMPLIFIES HEAVY EQUIPMENT INSTALLATION ON U. S. CAPITOL HILL

Korfund Steel Spring Mounts

absorb vibration and convert sudden shock loads to harmless, gradually applied forces. Their high isolating efficiency is due to the greater static cushions they provide. Standard Vibro-Isolators give up to 2" of cushion, special units up to 10" or more, compared to about ¼" for other materials. Yet, in every case, dynamic motion is imperceptible. And, unlike other materials, their performance can be accurately predetermined, eliminating costly trial and error.

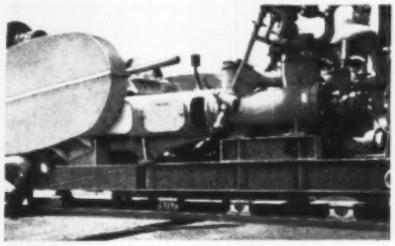
Their proven effectiveness for heavy machinery installations makes it unnecessary to add extreme safety factors when figuring dynamic loading of structures and soil. Foundation costs are cut, installation simplified.

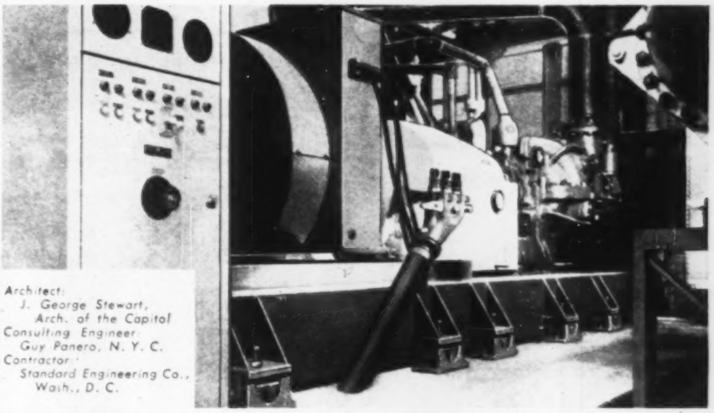
Oil Well on a Movie Lot Brings Soft Mountings Into the Picture

On the Paramount Studio lot pumping oil is good business—but it can't be permitted to interfere with the main job of making pictures. Yet the two horizontal slush pumps, for driving mud and sludge from the wells are prime sources of disturbance and can induce severe vibration, tremor and soil-borne noise that would ruin operations.

Floating each of the 64,000-pound pumps on twelve Korfund spring mounts was the quick and economical answer to the studio's noise and vibration problem. These units reduce dynamic loading of the supporting structure or soil bed—in some instances up to 99%—thus eliminating the need for special foundations.

Whether the problem is a sludge pump or centrifuge, a pulverizer or an extractor, chances are Korfund has already solved it.





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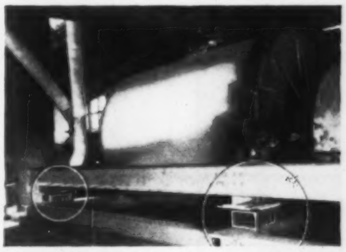
Modernization program for the power plant on the U. S. Capitol Hill, Washington, D. C., called for replacement of outdated refrigeration machines with units weighing almost three times as much. Photo shows one of the four York 2200-ton centrifugal machines installed to meet increased cooling demands. Because no additional piles could be driven to support the increased load or alter the natural frequency of the foundation, the total suspended weight of 210,163 pounds of each machine was floated on 15 Korfund resilient steel spring machine mounts. Using stock mounts and sound insulation pads, the natural frequency of the isolation system was held to 40% below the disturbing machine frequency—the required specification—and permanent elimination of vibration and noise was achieved—at less than 0.8% of the equipment cost!

Faced with tough machinery installations? It will certainly pay you to talk to the Korfund engineer in your city.

90,000 Pound Pebble Mill "Floats" on Upper Floor

For best layout and gravity flow of materials, engineers for a large processing company installed this pebble mill high in the building. If rigidly mounted, the cost of special foundations or structural reinforcement would wipe out savings in materials handling, without guaranteeing freedom from dangerous vibration.

Korfund engineers used eight steel spring mounts to support the mill and its 21,000 pounds of charge. Instead of costly structural alterations, only a light steel platform was required as a machine base, yet vibration and shock loads into the building structure were completely eliminated.



Better plant layout, reduced installation costs, and prolonged equipment life are just some of the benefits of Korfund vibration control. Why not write Korfund for the full story?

FOR MORE DATA OR SPECIFIC RECOMMENDATIONS WRITE TO KORFUND FOR BULLETIN #67

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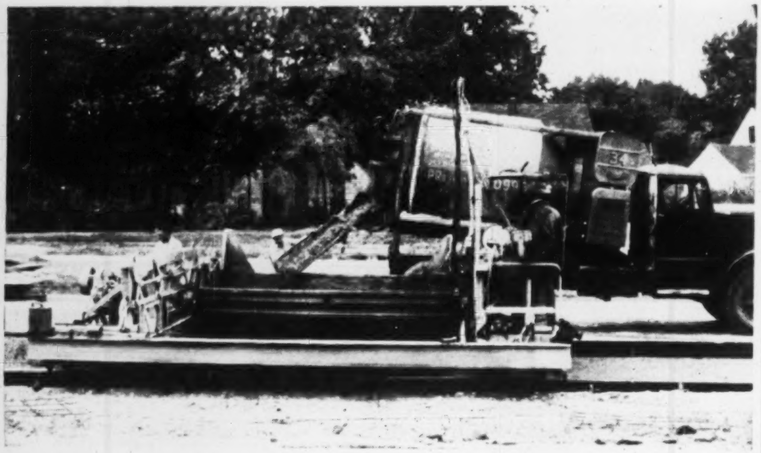

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ages" doesn't conclusively determine whether the sum named in the contract is actually for liquidated damages or is, in effect, a penalty fixed by the parties as security against actual damages, according to the court.

However, said the court, failure to use such language is a factor in determining whether the parties actually intended liquidated damages.[2]

The contracts in question provided that if the lessee defaulted, it would be a breach of contract and entitle the lessor to the full rental. As it has indicated, the court holds that such a contract provision is a penalty rather than liquidated damages for breach of contract.

"(1) Arco Bag Co. v. Facings, Inc., 151 N.E. 2d 438, Appellate Court of Illinois, June 9, 1958."

(2) Giesecke v. Cullerton, 1917, 280 Illinois 510, 513 117 N.E. 777, 778.

Contract Can't Be Dropped After Renewal Date

When a contract is renewable from year to year, it cannot be cancelled after the renewal date has passed, until the next renewal date.

On August 1, 1952, an engineer contracted with a machinery manufacturer—Arjay Machine Co., Inc.—to perform engineering supervisory services. In return, he was to receive 7½% of the gross orders resulting from his efforts. The contract provided that it should run for one year beginning August 1, subject to renewal from year to year.

From December 15, 1952, until January 8, 1954, Arjay paid the engineer $7,898 for services rendered.

However, on August 6, 1953, Arjay sent a letter to the engineer stating the contract was terminated as of August 1, 1953. In the meantime Arjay continued to use his services until January 18, 1954, when he was ordered to leave Arjay's premises. The firm paid the engineer until January 8, 1954. It then stopped payments, contending the contract was cancelled as of August 6, 1953.

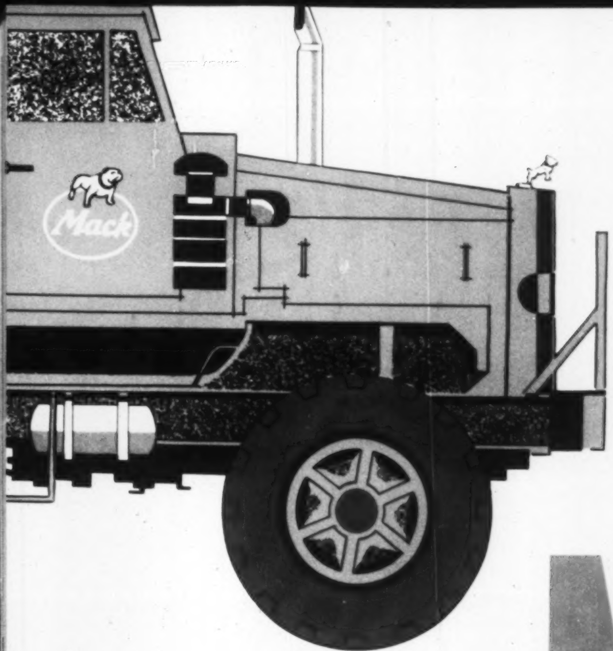
The engineer sued for the balance allegedly due him up to August 1, 1954. He claimed that the contract was automatically renewed, on August 1, 1953, for a period of one year.

The letter, dated August 6, was ineffective, particularly since Arjay continued to employ him until January, 1954, the engineer said.

The court upheld the engineer's contention and granted him a recovery.[1]

(1) Stein v. Arjay Machine Co., 137 A. 2d 460, Supreme Court of Pennsylvania, Jan. 6, 1958.

(*Legal continued p. 189*)



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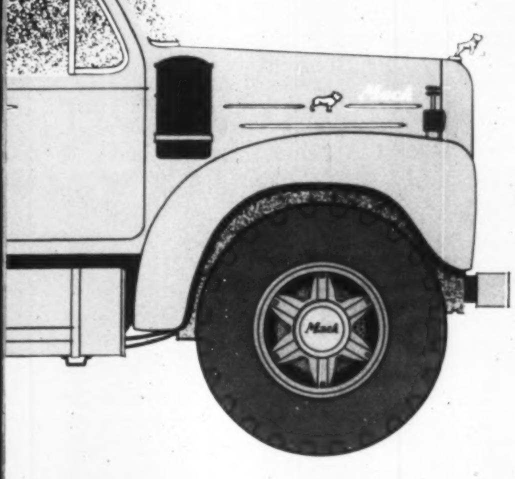

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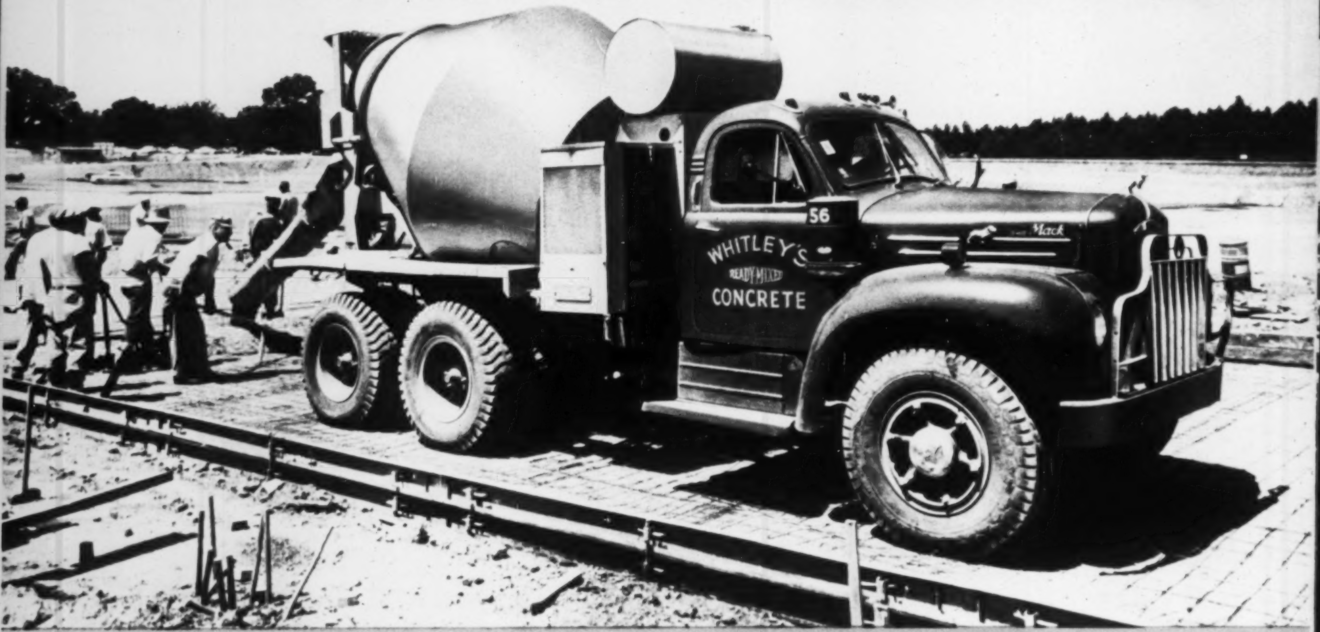
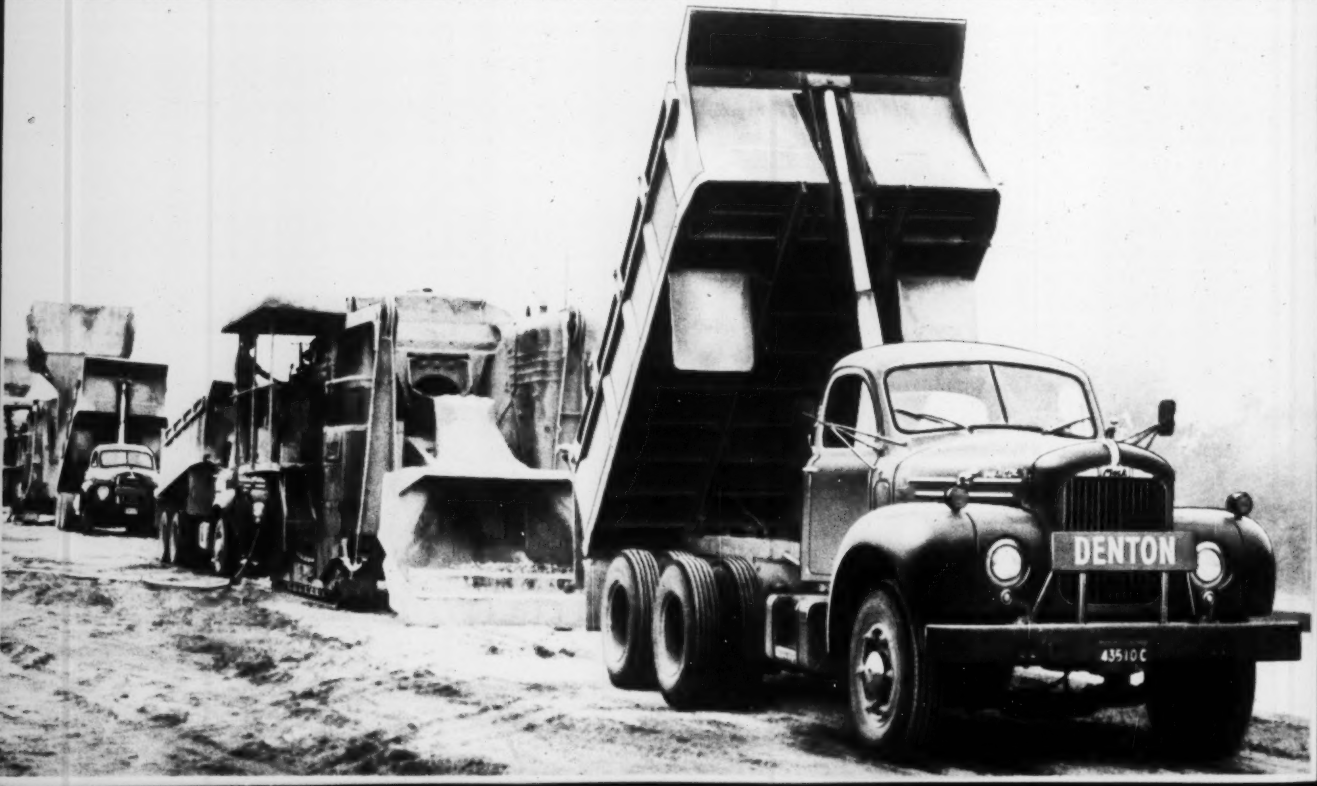


Mack B-40 Series—5 to 10 yards as rear dumpers, 5½ to 7 as mixers

They combine big-truck power, capacity and stamina with small-truck agility and economy for service as dumpers, tractors, mixers and platform trucks. 150 hp Mack Magnadyne gasoline engine. Wide choice of Mack transmissions up to 20-speed units, in on-highway and off-highway versions (depending on model). Choice of heavy-duty axles and frames that offer standard and optional reinforcement. Option of power steering. Six-wheelers offer Mack Balanced Bogie with Power Divider. All-wheel-drive units as well.



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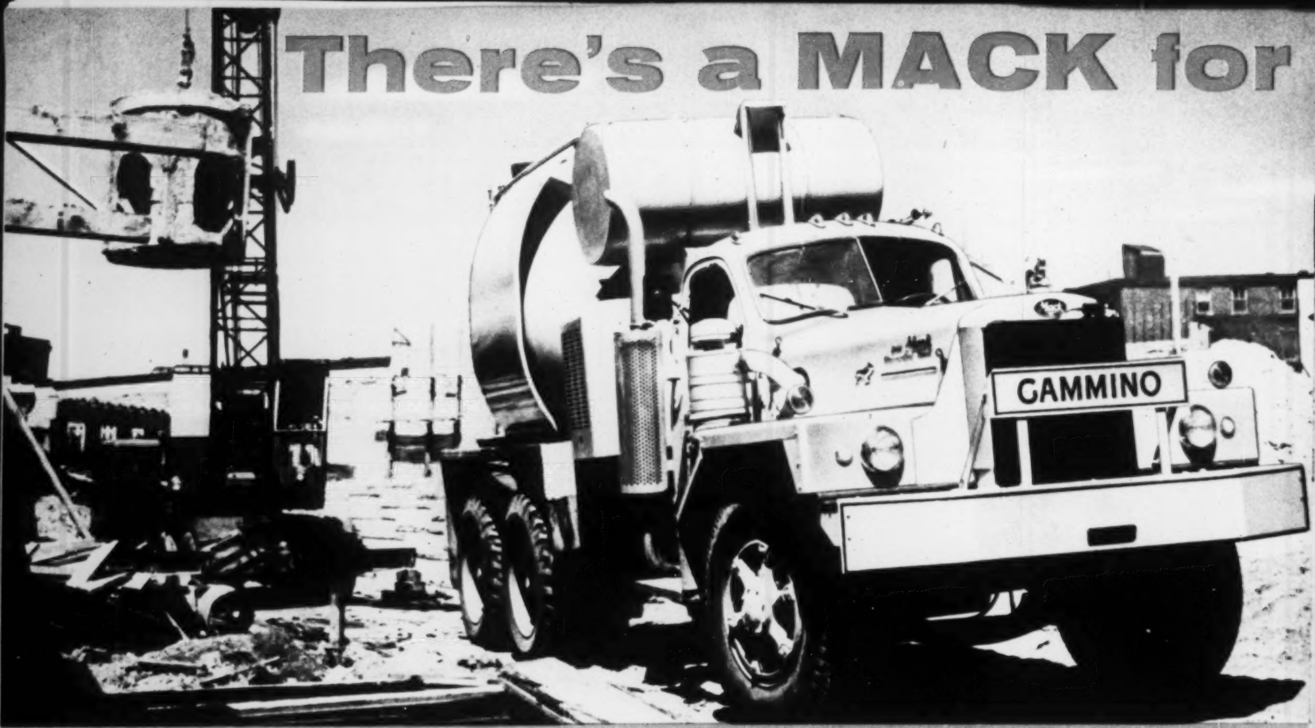

Mack B-80 Series—7 to 14 yards as rear dumpers, 7½ to 10 as mixers

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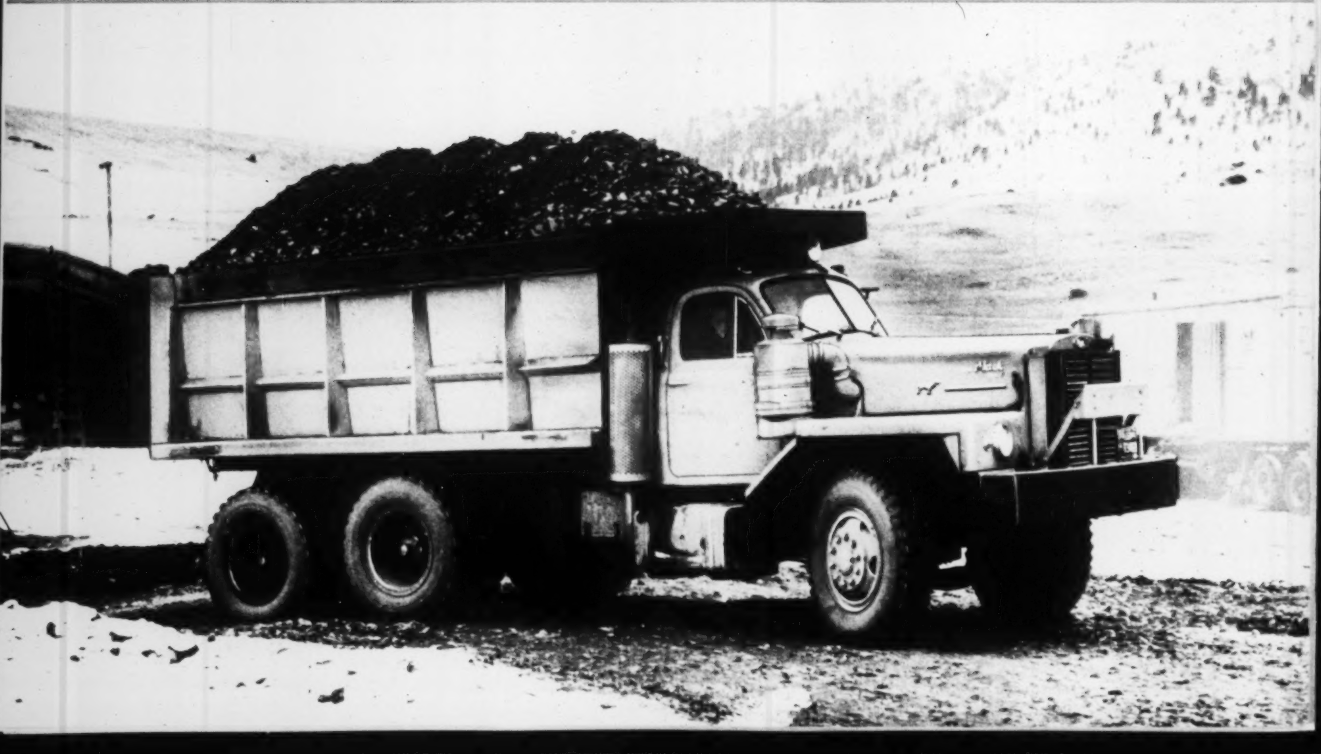
Up to 232 hp Mack gasoline or 205 hp Mack Thermodyne diesel engines; up to 320 hp stock diesels. Choice of Mack transmissions including Mack 20-speed Quadruplex. Mack Dual Reduction rear axles and—on 6 wheelers—Mack Balanced Bogie with Power Divider. Mack front-wheel drive axle on six-wheel-drive models. Option of power steering.



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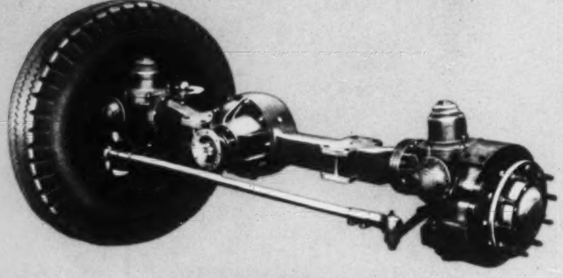
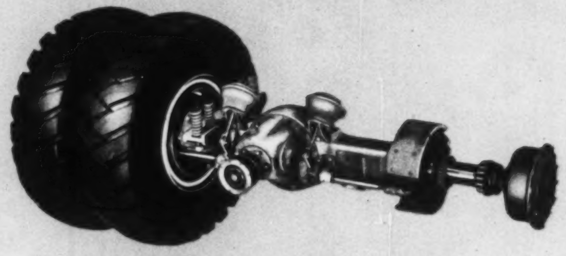


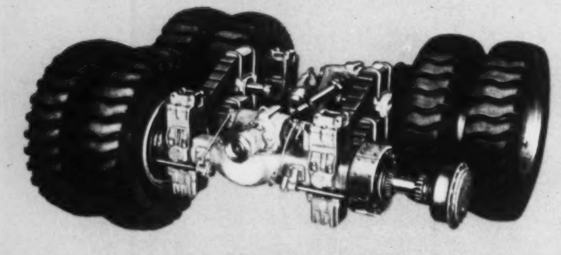
Strong Mack-built axles

Mack's drop-forged I-beam front axles are made super strong for long, trouble-free service. Extensive use of heat-treated steels for crucial parts means minimum maintenance. And Mack's exclusive **front-drive axle** (shown above) for all-wheel-drive trucks offers the greatest ground clearance and strength of any made—with all parts fully enclosed.



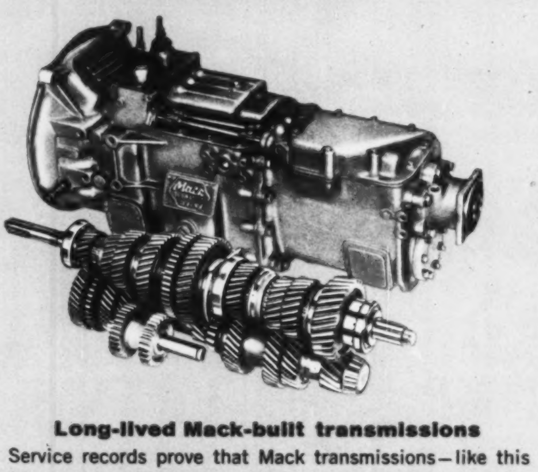
Durable Mack-built 2-wheel rear axles

Mack's two-wheel, rear-axle assemblies have an unmatched reputation for service under strenuous conditions. Dual Reduction carrier and Mack's famous Planidrive gear reduction at the wheel hubs provide the smooth distribution of power vital to top truck performance.



High-traction Mack-built Balanced Bogies

Macks perform where other trucks bog down—in mud, loose gravel or sand—thanks to Mack's exclusive Balanced Bogie with Power Divider—a 4-wheel drive, tandem rear-axle assembly with an inter-axle differential that distributes the power to wheels with greater traction. To achieve maximum road clearance in larger units, Mack Planidrive final reduction gears in all 4 hubs eliminate the need for outsized carriers and low-slung differentials.



Long-lived Mack-built transmissions

Service records prove that Mack transmissions—like this 20-speed Quadruplex—stand up to heavy-duty hauling far longer and need less attention than any others—thanks to the use of the finest gear metals known... to painstaking precision manufacture... and to exclusive Tetrapoid gear design that gives maximum strength, longer life and smoother action. Five- to twenty-speed units, each with ideal ratio steps.

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Oral Agreements

Oral pact annuls prior written one, and rights under it.

A written agreement may be rescinded by a subsequent oral agreement.

The principle is illustrated by an Illinois case in which two employment contracts were subsequently rescinded by an oral one. Later, under the oral contract, the employee was summarily discharged. He sued to recover the balance he would have received under the written contracts. An appellate court denied him recovery because (1) by his actions he rescinded his rights under the written agreements and (2) he suffered no damages, since he was soon employed elsewhere at higher wages.

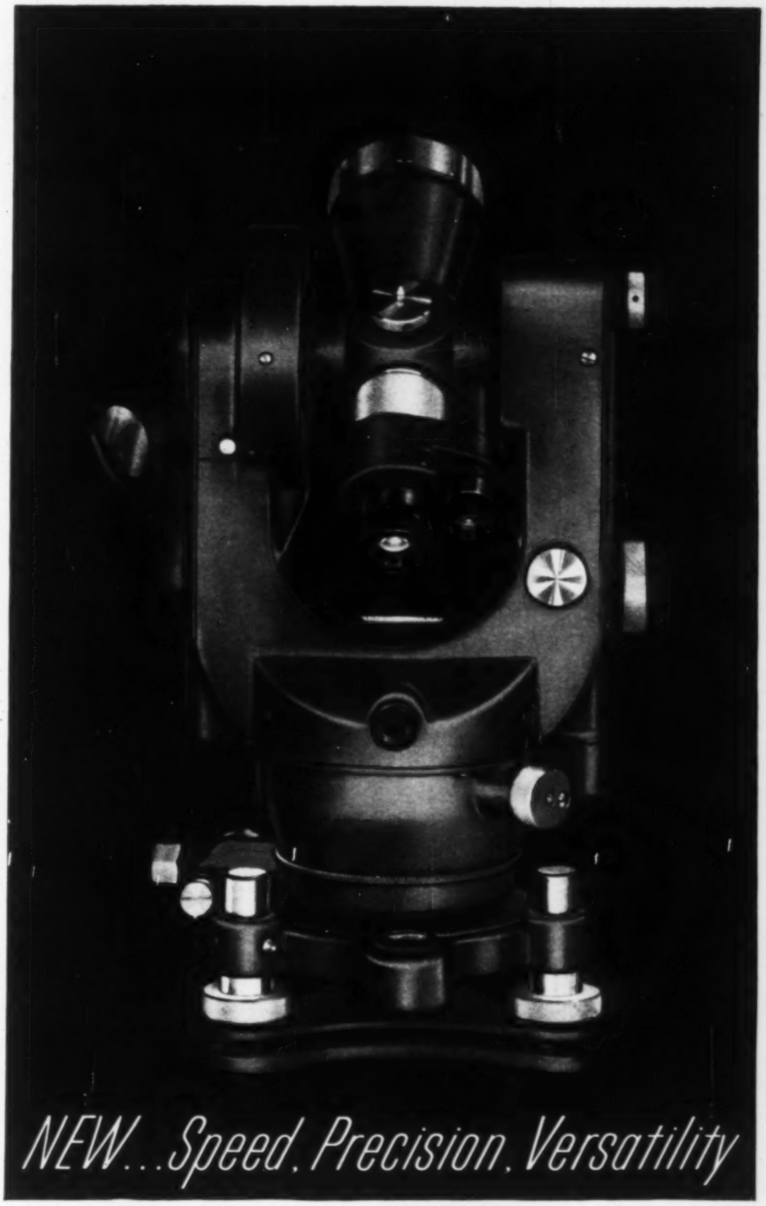
The facts in the case were these: Hansen Construction Co. and Ockerlund Construction Co. received subcontracts to build all floors in a Chicago housing development. In separate written contracts, the two firms hired Clifford G. Thorsen to supervise the work. Under the contracts, Thorsen was to receive $200 per week from Hansen until completion of Hansen's work and $175 per week from Ockerlund until February 28, 1953.

Later, the three parties orally agreed that Thorsen should work jointly as superintendent for both firms at a total salary of $250 per week, half to be paid by each firm. Thorsen was paid under this oral agreement from November 12, 1952, to February 23, 1953, when he was discharged. He accepted one week's salary as severance pay.

Thorsen later sued the two subcontractors for the difference between what he was paid and what he would have received under the written contracts. He claimed that, under the oral agreement, he was to receive that difference at the end of each job. The trial court dismissed the suit against Ockerlund, but granted Thorsen recovery of $1,750 from Hansen.

The appellate court reversed this decision.[1] It pointed out that Thorsen, when he accepted payments under the oral agreement, by his conduct conceded the written contracts were rescinded. The court ruled that "a written contract may be rescinded by a subsequent oral agreement."

The oral contract provided no specific term of employment. Therefore, the employers had the right to discharge Thorsen at any time, said the court. Moreover, Thorsen's conduct is consistent with Hansen's claim—that the written contracts were rescinded—but is inconsistent with Thorsen's own claim—



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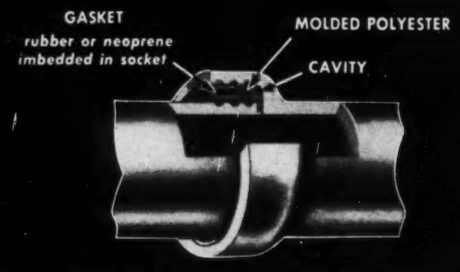

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that there was a modification of the written agreement. When Thorsen was discharged, he accepted an additional week's pay as severance pay.

As another reason for its decision, the appellate court cited the fact that, during the period for which he sought damages, Thorsen obtained other employment at higher pay than he would have received under the written contracts. Citing previous cases, the court stated: "The measure of damages for wrongful discharge is the contract price less what the employee earned or could have earned in other employment subsequent to his discharge."

(1) Thorsen v. Hansen, 151 N.E. 2d 421, Appellate Court of Illinois, May 7, 1958.

Guarantee of Work

Contractor liable for work, not damaged property.

A contractor who guarantees his work for a period of time after its acceptance is responsible for defects in the work. Generally, he is not liable for damages to personal property resulting from these defects—but that depends upon the language of the guarantee and the intent of the parties.

In a New Hampshire case, for example, a contractor guaranteed his work on a building for one year after acceptance by the owner and agreed, during that time, to make good for any faults or imperfections in the work.

During the term of the guarantee, a leaking pipe damaged floors and carpeting in the building. The owner sued the contractor and his surety for damages and was awarded a recovery by the trial court.

However, the appellate court reversed the decision, ruling that under the contract the owner was entitled to recover only the cost of repairing the floors and not for damage to personal property.[1]

The appellate court ruled that the language of the guarantee and specifications indicated that the parties intended the contractor to replace or repair any defective work or materials and any part of the building damaged by such defective work or materials. This applied to the damaged floors in this case.

However, the parties did not intend the guarantee to make the contractor responsible for damage to contents, such as carpeting, placed in the building by its occupants, the court decided.

(1) Paisner v. Renaud, 419 A. 2d 867, Supreme Court of New Hampshire, April 7, 1959.

(*Legal continued p. 192*)

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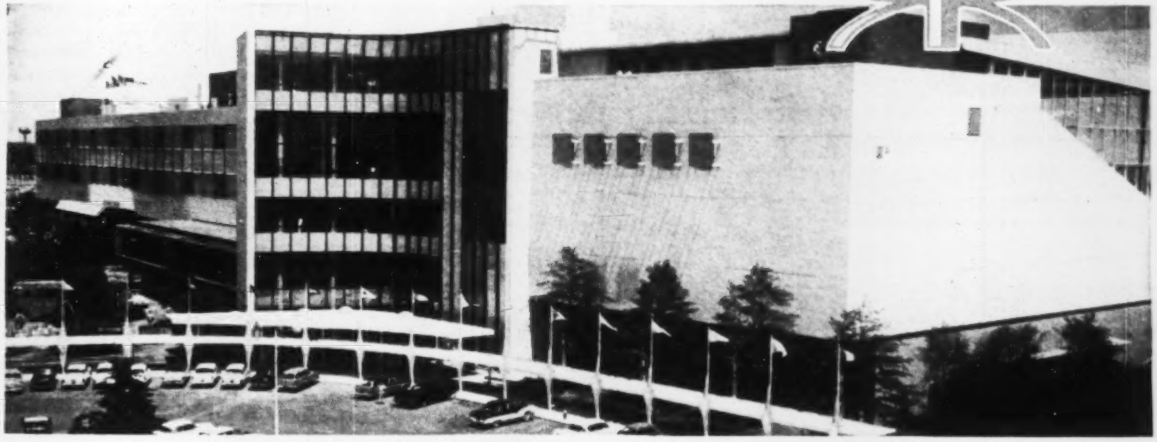

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Breach of Contract

Contractor may recover for work, if payments stop.

When an owner breaches a contract by failing to make payments called for in the contract, the contractor may recover the value of work performed and materials furnished up to the time of the breach.

This was the ruling of a New York court.[1] A contractor sued for damages based on the value of work and materials furnished up to the time the owner stopped the payments called for in the contract. The owner filed a counterclaim for damages suffered by an alleged failure of the contractor to perform the work properly.

The court found that the work was properly performed. It ruled the halted payments constituted a breach of contract by the owner and the contractor was entitled to the value of work done up to the time of the breach.

In effect, said the court, when one party breaches a contract for work performed, the other party is not restricted to an action for the contract price. He may sue for the value of work performed. If performance is prevented by the default in payments, then failure to perform the work in a specified time is excused. Moreover, in such a case the later cost of completion has no bearing on the contractor's right to recover for work performed. This principle also holds true in cases involving work for the state, where the contractor and lienors are allowed to recover.

(1) S. T. Grand Inc. v. Cedar Bay Park Corp., 182 N.Y.S. 2d 747, N.Y. Supreme Court, Nov. 3, 1958.

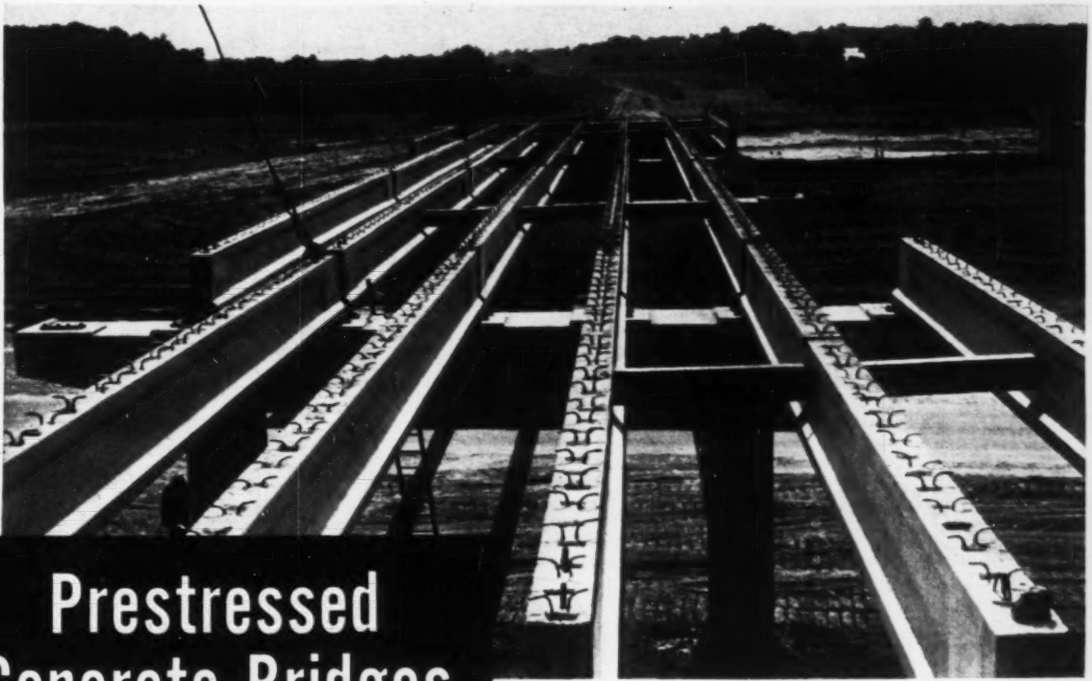
Parties To A Contract May Limit Their Liability

It is not against public policy for persons to limit their liability. Contract provisions that limit liability will be enforced.

A test of this principle arose after the U. S. Army Corps of Engineers called for bids to construct a pumping station in Florida.

Moretrench Corp., a large wellpoint supplier, invited bids for dewatering the site from Ivy H. Smith Co. and other interested firms. Moretrench proposed to furnish enough wellpoint equipment to dewater the site.

Smith Co. won the subcontract to dewater the site. The subcontract provided that: "The liability of the Lessor (Moretrench) to Lessee (Smith) is ex- expressly limited to the free replacement (f.o.b. point of shipment) of any

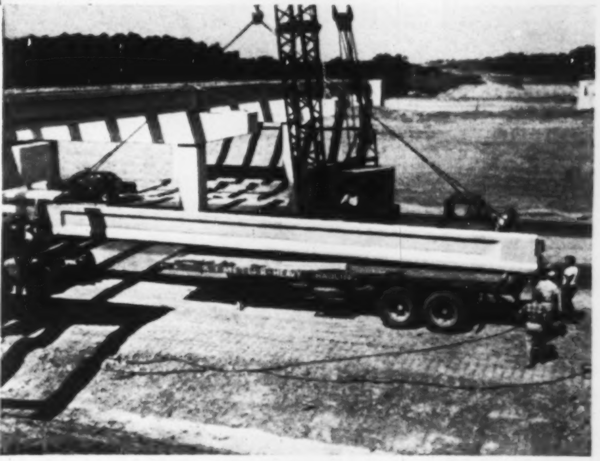


Prestressed Concrete Bridges

ON INTERSTATE ROUTE 40

Twin structures for U.S. Route 45 cloverleaf on Interstate Route 40, just north of Jackson, Tennessee.

A 51' beam ready to be moved from truck to piers. Traffic under bridge continues without interruption.



As the construction tempo of the new Interstate Highway System increases, more and more of its structures are being designed for prestressed concrete beams. Low first cost, negligible maintenance, speed of erection, and attractive appearance are the reasons for this growing preference for prestressed concrete.

An example is the new Interstate Route 40 by-pass of Jackson, Tenn. Eight of the nine bridges on this job will have prestressed beams. A total of 264 beams will be used, ranging in length from 35′9″ to 92′3″, with the largest members weighing 47 tons each.

In the manufacture of these beams, R. H. Wright, Inc. used Lehigh Early Strength Cement for maximum production efficiency. Units were completed quickly, ready for trucking to the job site as needed.

This is another example of the advantages of Lehigh Early Strength Cement in modern concrete construction.

Lehigh Portland Cement Co.
ALLENTOWN, PA.

Owner: Tennessee Highway Dept.

Contractor: Oman Construction Co.
Nashville, Tennessee

Consulting Engineers: Lockwood, Kessler & Bartlett, Inc., Syosset, N. Y.

Prestressed beams manufactured at Milan, Tenn. plant of R. H. Wright, Inc., Fort Lauderdale, Fla.

Ready mix concrete for beams: Harpole Concrete Co., Milan, Tenn.

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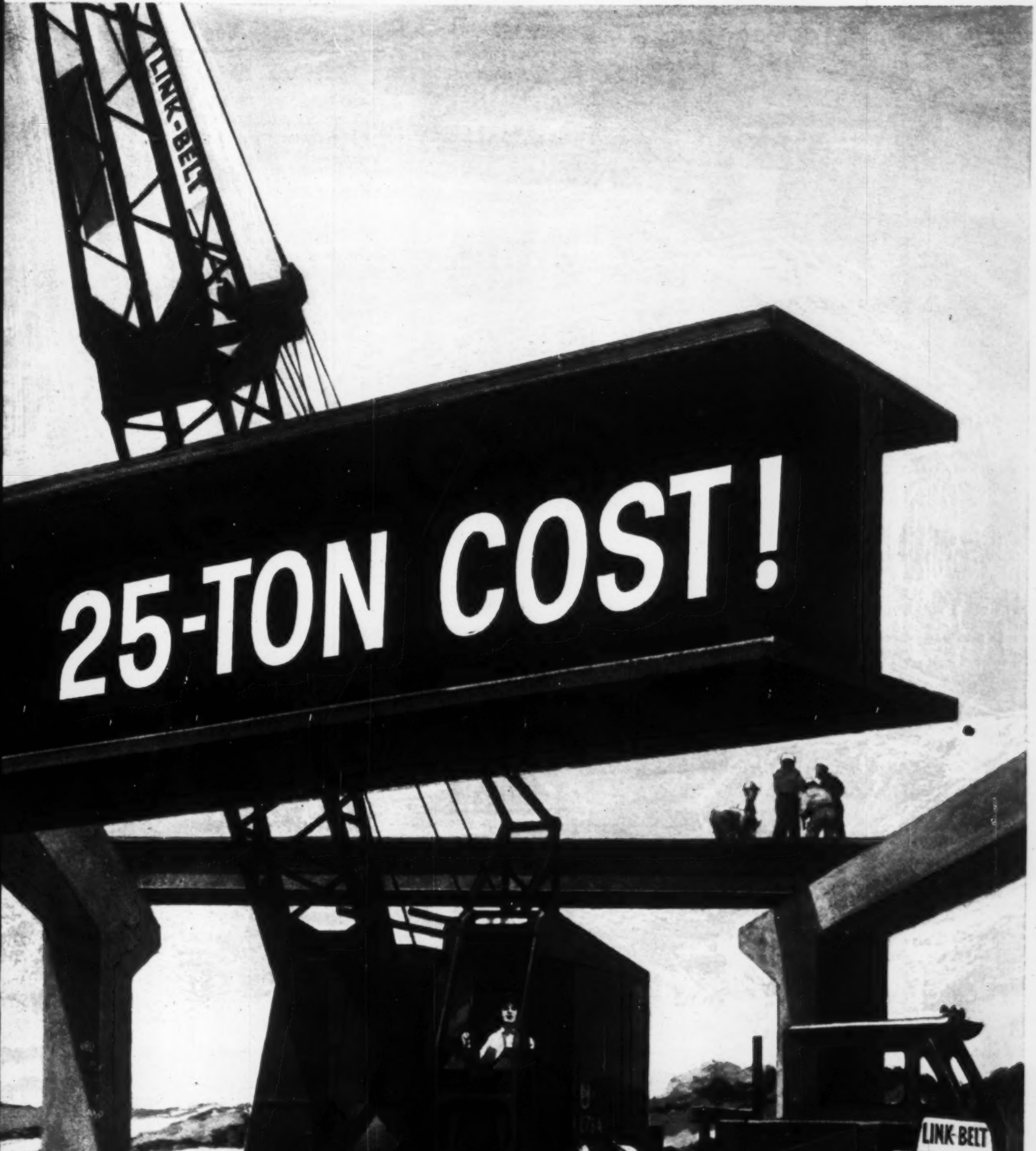
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defective part or parts of the equipment furnished under or subsequent to this agreement on receipt by Lessor of said defective part or parts . . . provided such defect is not caused by misuse or neglect on the part of Lessee."

Smith sued Moretrench, claiming Moretrench breached its agreement to furnish enough equipment to dewater the construction area. The breach of agreement, said Smith, cost it $500,000 in damages.

Both the trial and appeal courts dismissed Smith's suit, holding that the contract specifically limited Moretrench's liability to replacement of parts.[1]

It is not public policy to deny persons the right to limit their liability, decided the appeals court. It ruled ". . . where parties have integrated their contract in writing, they will not be permitted under the guise of proving independent agreements, to import such contract provisions supporting their claims."

(1) Ivy H. Smith Co. v Moretrench Corp., 253 F. 2d 688, U.S. Court of Appeals, April 9, 1958.

Liability for Blasting Damage Set By Contract

Where an owner-contractor-subcontractor relation exists, liability for damage from blasting and other construction operations can be passed along by contractural agreement.

S. N. Nielsen Co. contracted with the City of Joliet, Ill., to construct a sewer.[1] Nielsen subcontracted some excavation work, including blasting, to Robert R. Anderson Co. The blasting considerably damaged buildings owned by Veronica and John J. Gay.

Mr. Gay sued the city, contractor and subcontractor. All three defendants conceded liability to Mr. Gay and stipulated for the entry of a judgment of $5,000 in his favor. However, they asked the court to delay payment until two counterclaims were settled—one by the city that the general contractor had agreed to indemnify it against any claim for damages and a similar claim by the general contractor against the subcontractor.

In the general contract was this provision: "The Contractor agrees to indemnify and save the Owner harmless against all claims for damages to real or personal property or for injuries to persons, or deaths caused in any manner whatsoever, by explosions, blasting, handling or storing explosives for the work hereunder."

(*Legal continued p. 198*)

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Firm name
Address
City State

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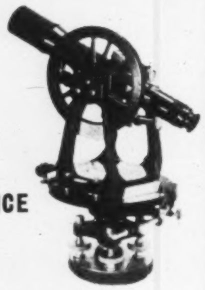

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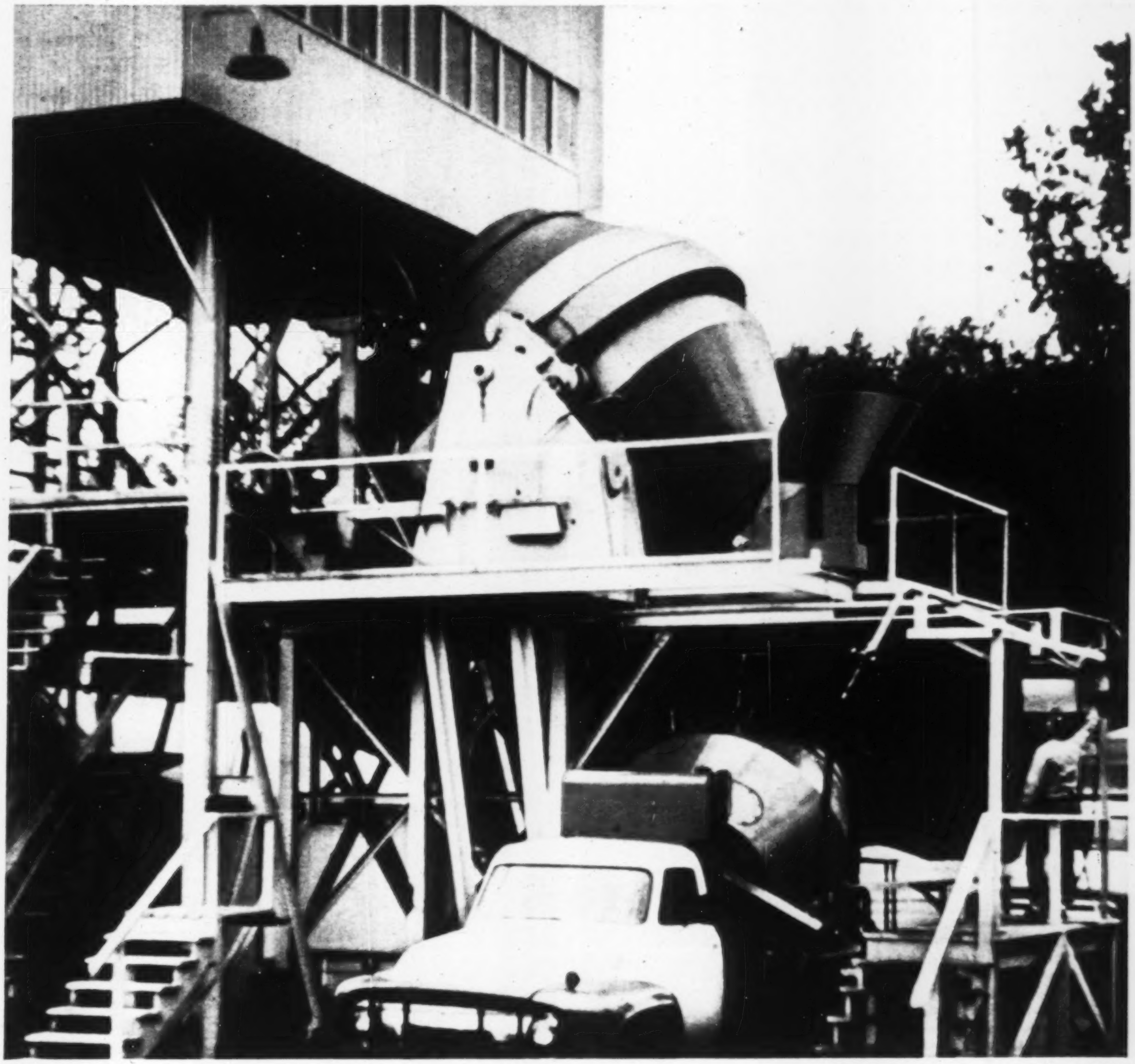

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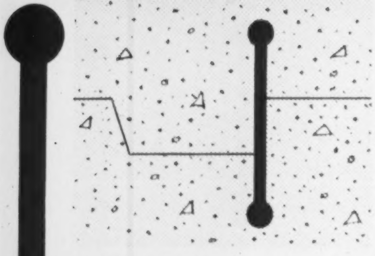

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The subcontract provided that the subcontractor would indemnify the Owner and Contractor against all claims, demands, loss, liability and damages, including costs and attorneys' fees, if a suit arose from an accident caused by the subcontractor or his employees.

The trial court ruled that, under terms of the contract, the general contractor was obligated to indemnify the city, and the subcontractor was obligated to indemnify the general contractor. An appeals court upheld the decision.

(1) Gay v. S. N. Nielsen Co., 152 N. E. 2d 469, Appellate Court of Illinois, July 16, 1958.

Arbitration

Maryland court sets forth general arbitration rules.

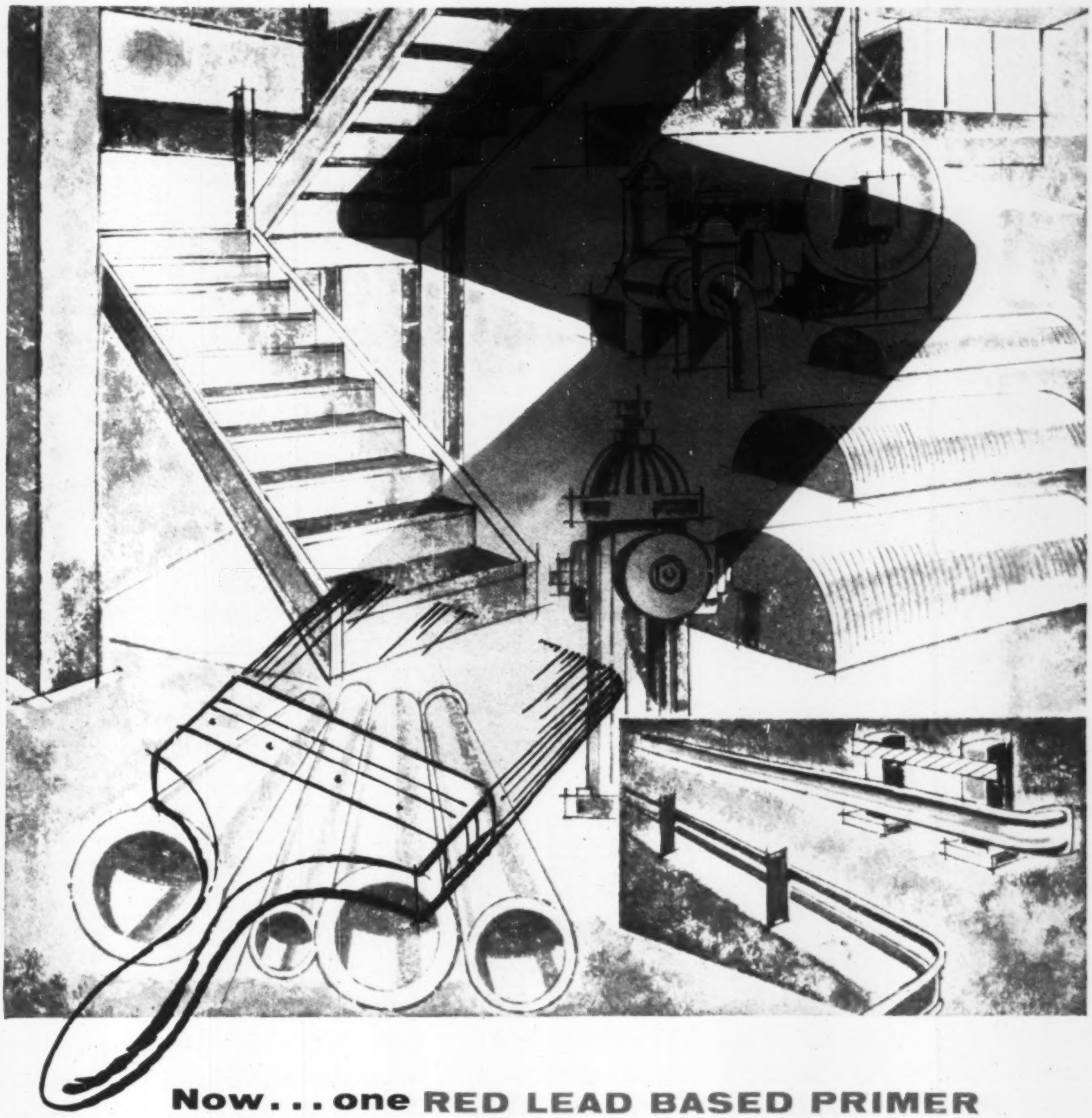
Parr Construction Co. subcontracted certain excavation and other work to Pomer Construction Co. Later, Pomer sued for the unpaid balance allegedly due under the contract. To settle the dispute, both parties agreed to use Matz as an impartial arbitrator.

The award decided upon by Matz was confirmed by the trial court and the decision was upheld on appeal.[1] One point raised on appeal was that the trial court wrongfully admitted as evidence a carbon copy of the arbitrator's findings, since Matz was not present for cross-examination at the trial.

The court held that, since the authenticity of the document was fully conceded by Parr, the carbon copy could be considered to be a duplicate original—and therefore primary, rather than secondary, evidence.

In its written opinion, the appellate court drew the following conclusions regarding arbitration of disputes:

- Arbitration is favored for settlement of disputes.
- An award may be opened to impeachment for fraud, misconduct, bias, prejudice or mistake, but every reasonable interpretation supports the validity of an award.
- The burden of showing that an award is invalid rests upon the party attacking the award.
- Ordinarily, an arbitrator may not impeach his own award.
- An award will not be set aside for any mistake of law or fact not appearing on its face.
- When the arbitrator must base his award upon an estimate or appraisal, agreement by the disputing parties to submit their dispute to an arbitrator means they will be bound by the result.
- If a claim is submitted to arbitra-



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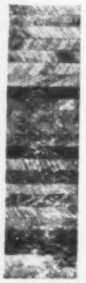

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tion, and an award duly made by arbitrators, the terms of the award are conclusive on the disputing parties.

- When the award is in the nature of an appraisal and merely determines questions of fact, the suit will still lie on the original causes of action; but, in the absence of invalidating circumstances, the award will be conclusive evidence of facts found.

In this case,[1] Pomer considered the award amount to be simply an appraisal. He sued for the blance due him under his contract rather than receive a judgment based on the arbitrator's award.

(1) Parr Construction Co. v. Pomer Construction Co., 144 A. 2d 69, Court of Appeals of Maryland, July 19, 1958.

Performance Delays

Owner not liable for delays if the contract so provides

Construction contracts, particularly those for large jobs with many contractors, often provide that the contractor may not make a claim for damages caused by the owner or other contractors. Courts generally enforce such provisions. Though they may burden the contractor with increased costs, he has no remedy since he knowingly makes an agreement that bars his right to recover.

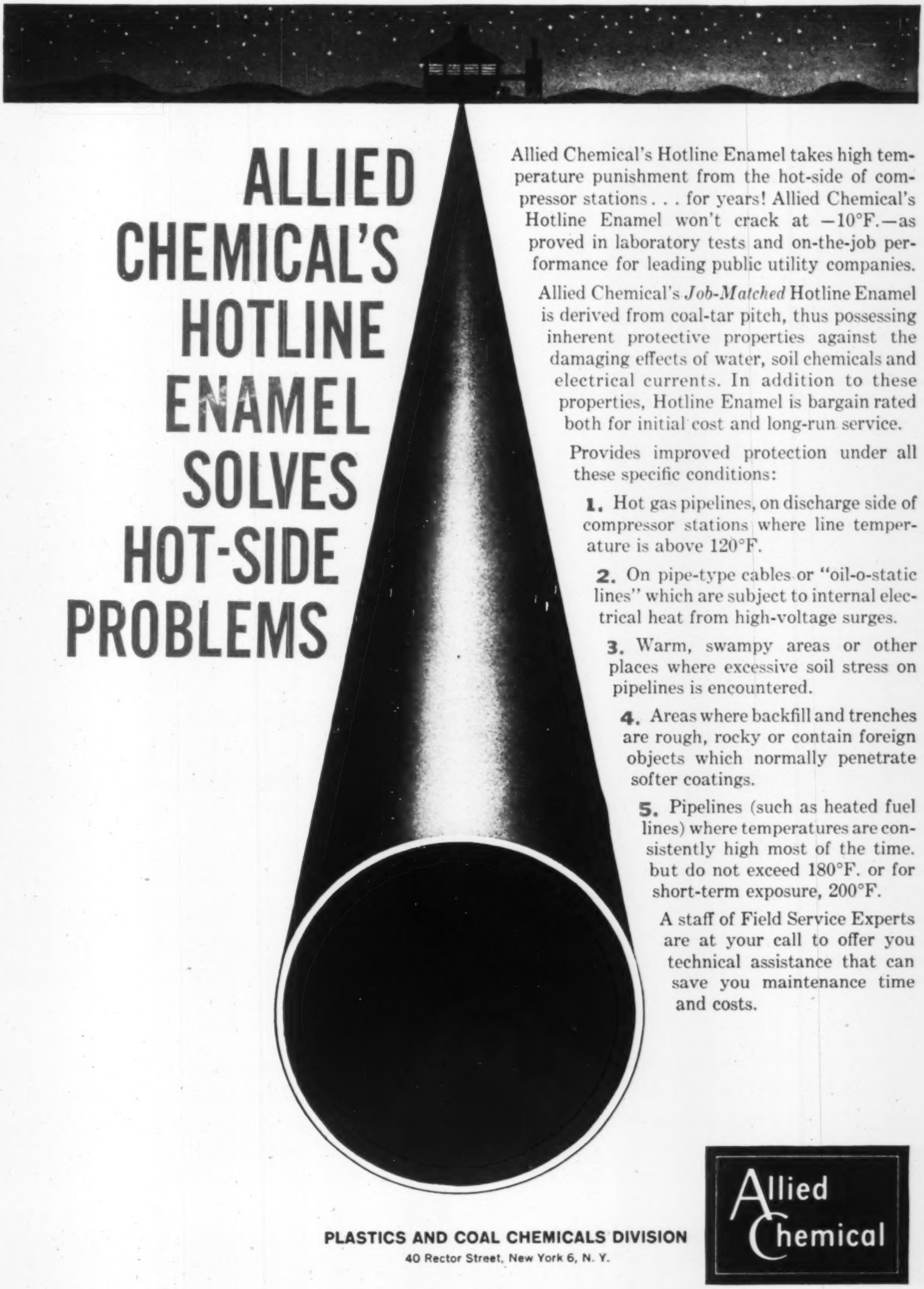
One case of this type arose on a contract for construction of two government buildings.[1] The contractor sued for damages caused by government delays. The contract provided "that no claims shall be made or allowed to the contractor for any damages which may arise out of any delay caused by the United States."

The court dismissed the suit. It ruled that the contractor had made a plain, unrestricted, comprehensive covenant that it would make no claim for damages caused by government delays. This, said the court, is emphasized by the accompanying declaration that such a claim, if made, would not be allowed.

In another case, the court ruled that the specific provision in question positively prohibits the contractor from claiming damages because of hindrances or delays from any cause.[2] This is further emphasized, said the court, by a stipulation that if such delays are caused by the owner, more time will be allowed to complete the work, providing the contractor has written notice of the cause of delay that's alleged to result from the owner's conduct.

(1) Wells Brothers Co. v. United States, 254 U.S. 83, 65 L. Ed. 148.
(2) Ericksen v. Edmonds School District, No. 15, 125 P. 2d 275.

(*Legal continued p. 204*)



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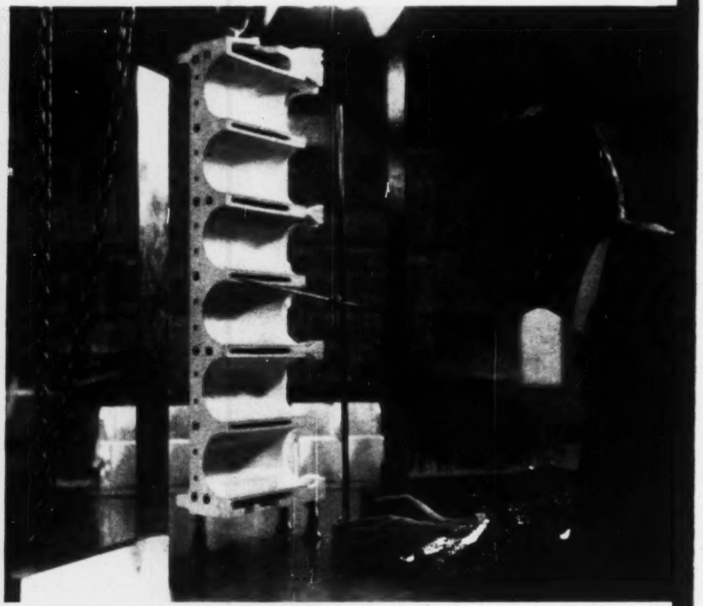

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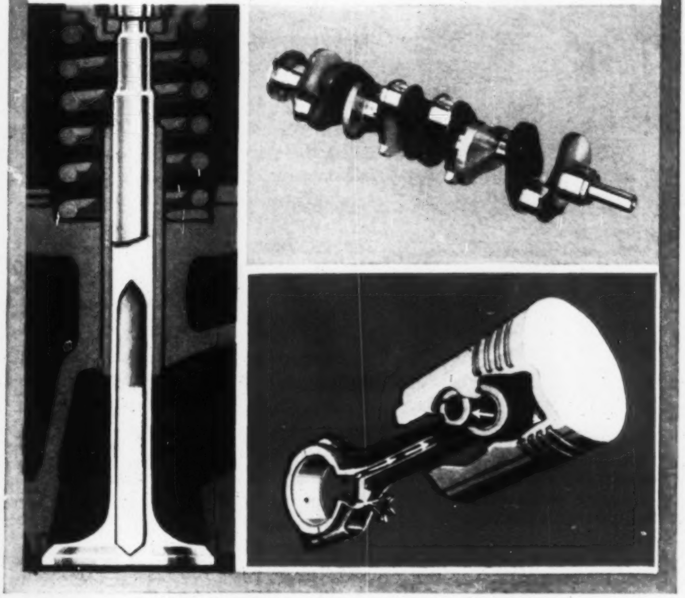

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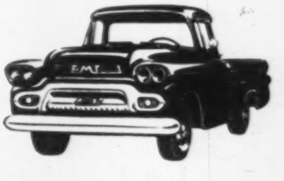

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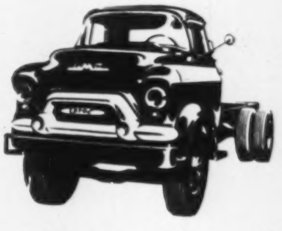

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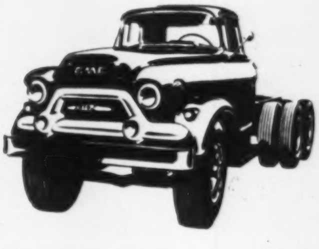

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Deed Restrictions

Court enforces building restrictions as written

The law permits a seller to place in a deed, limitations on the type of buildings that may be built on the land that is sold. The restrictions should be drafted carefully because courts will be guided by the language of the restrictions, not by what the parties hoped to accomplish.

The Baily Development Co. sold 41 lots. Each deed of sale included the following covenants:

- No structure shall be built except in accordance with plans approved by the development company.
- Only single-family dwellings, including an attached, private garage architecturally suitable to the house, can be built on the lots.

The development company refused to approve a buyer's plans. The garage faced the street, said the company, and it would only approve plans for a garage attached to the side or rear of the house.

When the buyer began construction anyway, Bailey sued for a court injunction to restrain construction until the plans were approved.

The court granted the injunction, but was reversed on appeal. The appellate court ruled there was nothing in the deed restrictions that prohibited construction of the garage facing the street. The court held that the covenant specifies no particular location for the garage entrance, but only provides that an attached garage shall conform architecturally to the house.

(1) Carranor Woods Property Owners' Association v. Driscoll et. al., 153 N.E. 2d 681, Court of Appeals of Ohio, July 15, 1958.

Fraud In Contracts

Fraud may void contract and bring tort suit

A party guilty of fraudulent misrepresentation while making a contract may be sued for committing a tort, even if the contract is not valid.

This was the decision of the New York Court of Appeals in a case where fraud was committed while making a void contract. Before making its ruling, the court outlined the requirements in suing for damages from fraudulence.

It must be shown that the defendant knowingly lied to deprive the plaintiff of a benefit, and that the plaintiff was thereby deceived and damaged, the court said. It is therefore essential that

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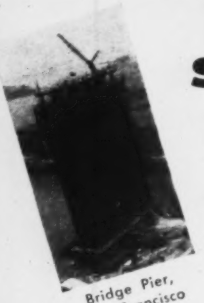
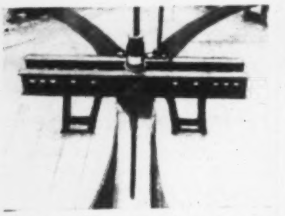

Bridge Pier, San Francisco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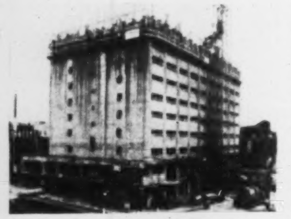
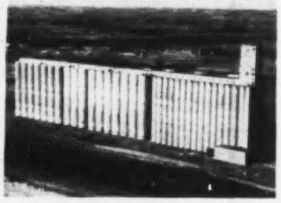


Elevator, Fremont, Neb.



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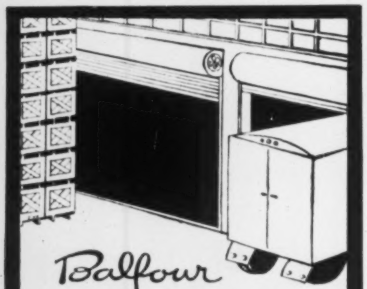

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there be: misrepresentation of a material fact; falsity; knowledge by the defendant that his representation is false and that the plaintiff believes it; deception and; injury.

Quoting earlier cases, the court said, "one who fraudulently makes a misrepresentation of . . . intention . . . for the purpose of inducing another to act or refrain from action in reliance thereon in a business transaction is liable for the harm caused by the other's justifiable reliance upon the misrepresentation."

"The present action," said the court, "is in tort, not contract."[1] This means that the suit depends not on the contract between the parties, but "on deliberate misrepresentation of fact, relied on by the plaintiff to his detriment."

One defense in the suit was that the contract was void because it was not in writing, as required by the Statute of Frauds. In answer to this, the court stated that if, in order to sue, it were necessary to prove a contract existed, then the plaintiff could not recover damages since the contract was void under the Statute of Frauds. But, on the other hand, said the court, one who fraudulently misrepresents his intention to perform an agreement is liable for a tort whether the agreement is enforceable or not. The Statute of Frauds is not intended as immunity against fraud, ruled the court.

(1) Channel Master Corp. v. Aluminum Ltd. Sales, Inc., 4 N. Y. 2d 833, New York Court of Appeals, June 25, 1958.

Contract Fulfillment

Contractor must prove substantial performance.

A contractor must prove that he has substantially performed his contract to the satisfaction of a "reasonable man," when he seeks to recover money due under the contract.

A contractor agreed to perform certain repair work in a building. When work was completed, the owner refused to pay the balance due, claiming part of the work was defective.

The contractor sued for the balance allegedly due him. The owner's defense was twofold. He contended that: The work was improperly performed and that the contract provided all repair work must be done to the owner's satisfaction.

The trial court ruled in favor of the contractor, but the appeals court reversed the decision and ordered a new trial.[1] It held that the contractor failed to prove substantial performance.

The appellate court stated: "It is

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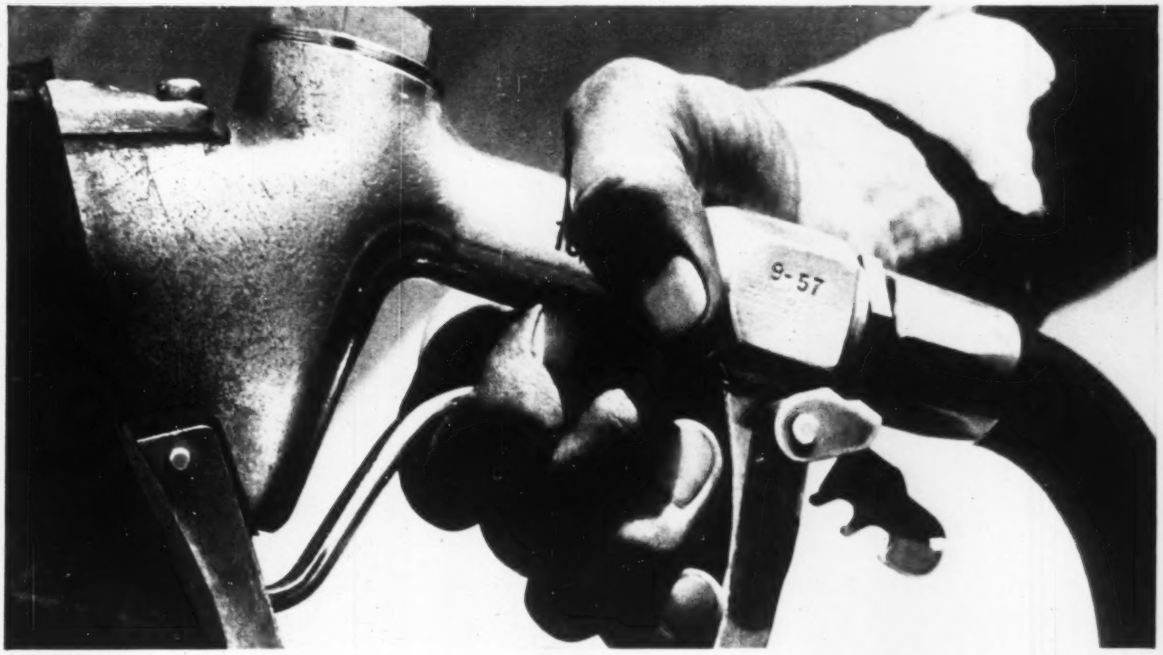

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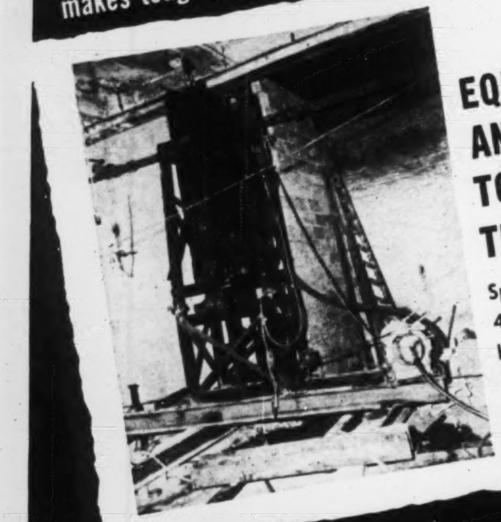

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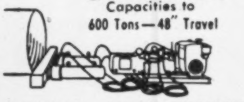

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basic that, where plaintiff (contractor) is suing upon its contract and alleging performance which is denied, it is incumbent upon the plaintiff to prove performance, at least substantially, of the contract according to its terms."

Referring to the contract term calling for performance to the owner's satisfaction, the court indicated that the owner should appraise the work as any reasonable man would do. The court cited many cases noting that the burden rested upon the contractor to prove that the work performed would have been acceptable to any reasonable person.

(1) Enterprise Roofing & Sheet Metal Co., Inc., v. Howard Investment Corp., 152 N.E. 2d 807, Court of Appeals of Ohio, Oct. 3, 1958.

Architect Can't Ban Parts Because of the Brand

Fixtures or equipment furnished under a subcontract may be rejected on the basis of quality, but not on the basis of brand or manufacturer.

A test of this principle arose under a plumbing subcontract requiring the work to be done according to certain specifications and the architect's satisfaction. No particular make of fixtures was specified, but the subcontractor told the architect what brand he intended to use. When the subcontractor used a different make of fixtures, the architect sued him.

The court ruled that the architect could not arbitrarily condemn the use of fixtures of equally good quality to those originally named.[1] Generally, when one agrees to satisfy another party, he has no recovery unless the other party is satisfied, the court held. However, this only applies to a question of personal fancy or taste, and not to the installation of plumbing fixtures.

The contract only required equipment that would "be sanitary, useful, suitable and neat." If the fixtures that were furnished complied with these requirements, the architect was unjustified in rejecting them just because they were made by a particular manufacturer, held the court.

(1) Midgley v. Campbell Building Co., 38 Utah 293, 112 p. 820.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*

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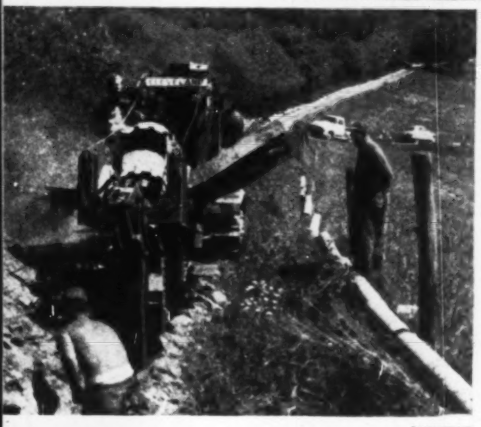

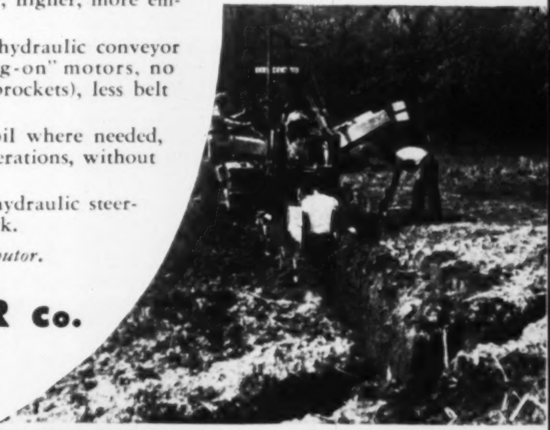

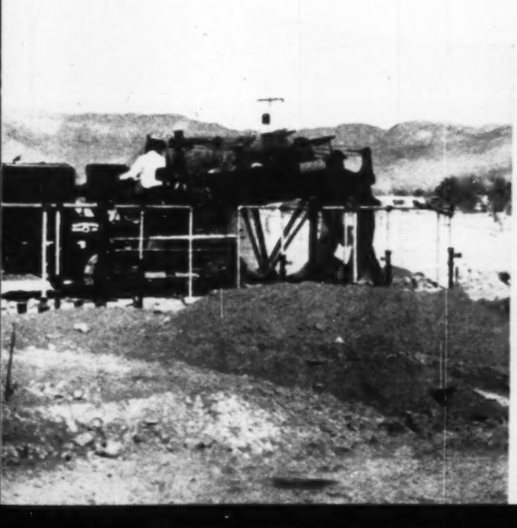

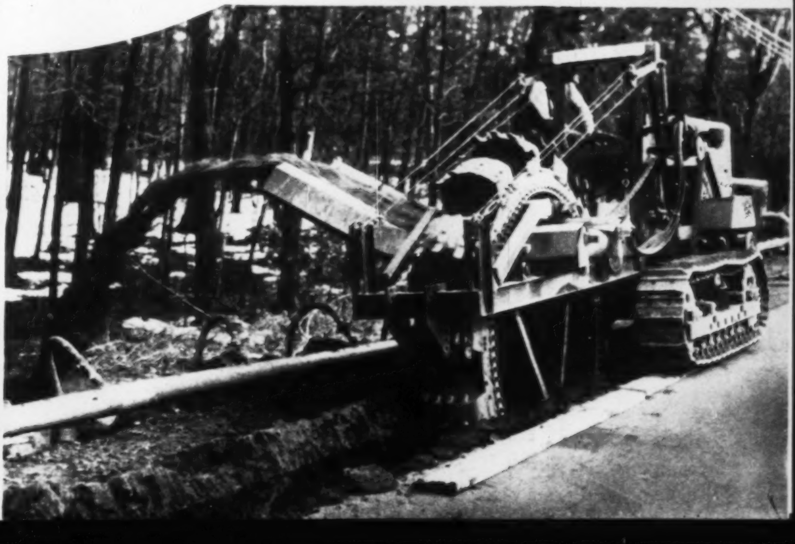

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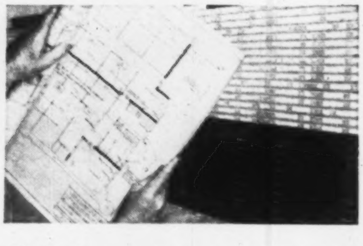

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How to Build With Aluminum

ALUMINUM CONSTRUCTION MANUAL—392 pages. The Aluminum Association, 420 Lexington Ave., New York 17, N. Y. $3.00.

This book fills a need that has become progressively more pressing as the use of structural aluminum has rapidly increased. The designer in steel has long had available a single volume giving the sizes and properties of structural shapes, load capacities and other design data. For designers in aluminum such information has been scattered and in some cases non-existent.

With this Aluminum Construction Manual, a single volume, authoritative source becomes available for the first time. Produced by the Aluminum Association, whose members account for all the primary aluminum and some eighty percent of the aluminum mill products made in the U.S., the manual is truly an industry presentation of what is considered good and safe practice. Highly competent structural consultants aided significantly in its preparation.

After an introduction devoted to "some things the designer should know," the manual is divided into five parts. Part one relates to available aluminum structural shapes, giving their dimensions, weights and properties. Included also are the standard tolerances and miscellaneous data necessary for designing and estimating.

Part two covers detailing practice and data on riveted and bolted connections.

Part three presents for the first time the allowable loads for beams and columns produced in alloy 6061-T6. The data for various types of laterally supported beams and for concentric loads on columns were computed at the Polytechnic Institute of Brooklyn under the supervision of Prof. R. B. B. Moorman, head of the civil engineering department. Similar data for other structural alloys will be included in later editions. Alloy 6061-T6 is the most widely used at present.

The fourth section presents data on nine alloys, which fulfill most structural needs. This section also includes the ASCE specifications for structures incorporating alloy 6061-T6 as well as alloy 2014-T6.

The final portion of the manual is devoted to miscellaneous reference data commonly used by practicing engineers and designers and found in most other handbooks.

How to Build in Cold Country

BUILDING IN NORTHERN CANADA—by R. F. Legget, and H. B. Dickens. 75 pages. Division of Building Research, National Research Council, Ottawa, Canada. 75 cents.

The problems of construction in the northern half of Canada, hardly given a thought before the war, have commanded increasing interest ever since. Construction of the aircraft warning stations of the DEW line fomented some of this interest, but much of it stems from the recent development of mineral, fishing and forestry resources and the exploration for oil and gas. Also, the government decided in 1954 to move the town of Aklavik, main settlement of the Far Northwest, to a new location, where it could be expanded and provided with a suitable airfield. This created a host of building problems. Other problems are in the making as a result of studies now under way to choose an improved site for the Baffin Island community of Frobisher Bay.

It is as a result of these increased needs for information on building in the far north that the Division of Building Research of Canada's Research Council assembled this report. Well founded on technical studies carried out by research teams sent out from Ottawa as well as by work of the Division's new Northern Research Station at Norman Wells in the Northwest Territories, the report is a useful guide to cold country construction.

The bugaboo of the region, permafrost, is treated in considerable detail, and solutions to problems encountered in building foundations, road and runway construction and the development of water supplies and sewage disposal are outlined. Another section of the report is devoted to special problems of making structures resistant to wind, cold and fire. And finally the importance of logistics in such remote regions is treated, especially with respect to the economics involved. Everything is more expensive than it would be in developed areas.

Eventually the Division will compile a manual covering building practice in Northern Canada, but in the meantime this report is designed to present the information now available.

(Books continued p. 214)

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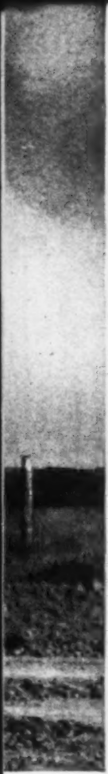

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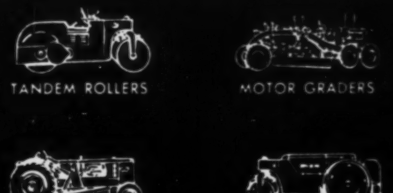

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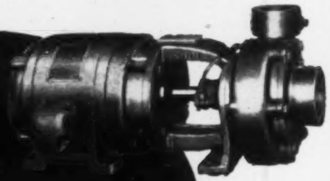

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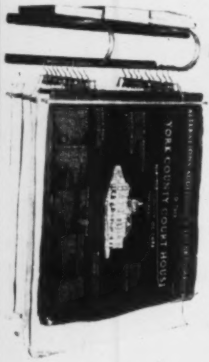

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Power Plant Textbook

POWER PLANT THEORY AND DESIGN—By Philip J. Potter. 710 pages. Ronald Press Co., New York 10, N. Y. $10.50.

This is a thoroughly revised and enlarged edition of Professor Potter's well known work, "Steam Power Plants." As in the first edition, this textbook emphasizes central power station design "because such stations include all the problems of method and equipment that would be involved, though often less rigorously, in the design of industrial plants and smaller power plants." The biggest changes in the text are due to advances in the science of power plant design since publication of the last edition.

The new edition also emphasizes engineering economy. This emphasis is now reflected even in the first chapter, which introduces the concepts involved in economic selection of equipment. Many examples showing the application of principles are distributed throughout the book.

The scope of the book has been broadened by addition of four chapters. These deal with diesel, gas-turbine, hydroelectric and nuclear plants.

Like its predecessor, the new edition should be a useful reference for engineers concerned with power plant design.

Organizations in Order

ENGINEERING SOCIETIES DIRECTORY—1959 —Engineers Joint Council, 29 West 39th St., New York 18, N. Y. $3.50.

The first revision of this reference book since 1956 provides basic information about national, regional, state and local engineering groups. Addresses, memberships, names of secretaries and organizational publications are included. Canadian engineering societies are also listed.

Brief Reviews . . .

• **Skid prevention**—The Proceedings of the First International Skid Prevention Conference are now available at $10.00 a copy from the Virginia Council of Highway Investigation and Research, Box 3817, University Station, Charlottesville, Virginia. The 600-page publication is in two parts and contains a total of 59 papers with the discussions and committee reports. Among the subjects covered are kinds of skidding and accidents involving skidding; relationships of tire design and vehicle dynamics to skidding; laboratory and field methods of measuring road surface friction; and the relationship of road surface properties to skidding.

(*Books continued on p. 216*)

Give your trucks more air reserve for SAFER braking with

WAGNER ROTARY AIR COMPRESSORS

COOLER – Rotary operation cools air in compressor and dome before it is discharged into the line. This prevents carbon formation – reduces fire hazard – lets you use flexible connection in discharge line.

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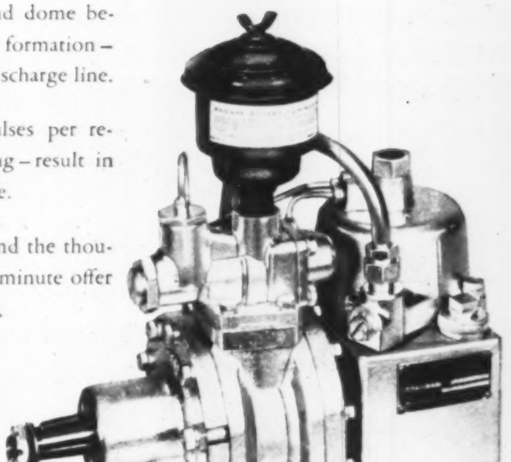

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According to G. D. Mann, President-owner of the American Testing and Engineering Corporation (ATEC) of Indianapolis, Indiana, "We have found that the mobility of the BE-36 and its ability to core rock and make auger soundings as well as drive casing gives us *maximum versatility and ease of operation.*"

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How to handle WET JOBS

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Contractor:
Traylor Brothers

Owner:
Aluminum Company of America

32 MILLION GALS PER DAY: Griffin's extra-capacity "Aquahog" wellpoints handle extra-heavy ground water flow in coarse-layered soil at river's edge. Multi-stage system is shown controlling 27 ft of water in deep open-cut excavation.

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- **Radiation hygiene**—A practical reference on industrial, medical and research uses of radiation and atomic energy. Special applications are included in the fields of sanitary engineering, industrial hygiene and health physics. Radiation Hygiene Handbook — editor-in-chief, Hanson Blatz, radiation consultant to the City of New York and associate professor of industrial medicine at New York University. 926 pages. McGraw-Hill Book Co., New York, N. Y. $27.50.

- **Fire safety booklet**—The 1959 edition of "Fire Safe Schools," issued by the National Board of Fire Underwriters, provides answers to problems facing school administrators, public officials and fire departments working toward greater fire safety in schools. National Board of Fire Underwriters, 85 John St., New York 38, N. Y.

- **Cutting insurance costs**—The American Mutual Liability Insurance Co., Wakefield, Mass., offers for $1.00 a book entitled "How To Cut Your Insurance Costs." It is a record of a special conference between editors of McGraw-Hill publications and insurance specialists from American Mutual, Mutual Boiler & Machinery Insurance Co., and the Associated Factory Mutual Insurance Companies, at which ways and means for reducing insurance costs, by line of insurance, were discussed.

Just Published . . .

Manual of Recommended Practice for Concrete Operations During Hot or Cold Weather—by The Concrete Industry Board, Inc., 220 East 42 St., New York 17, N. Y. $1.00

Hydrologic and Physical Data for Sandstone Creek Watershed in Western Oklahoma, 1951-56—Oklahoma Water Resources Board, Oklahoma City, Okla.

International Problems of Financial Protection Against Nuclear Risk—Atomic Industrial Forum, 3 East 54th St., New York 22, N. Y. $6.00.

Methods of Measuring the Demand for and Value of Outdoor Recreation—Resources for the Future, Inc. 1145 19th St., N. W., Washington 6, D. C. 50 cents.

Some Recent Developments in River Basin Planning and Evaluation—Resources for the Future, Inc., 1145 19th St., N. W., Washington 6, D. C. 25 cents.

Malthusianism and Conservation—Resources for the Future, Inc., 1145 19th St., N. W., Washington 6, D. C. 50 cents.

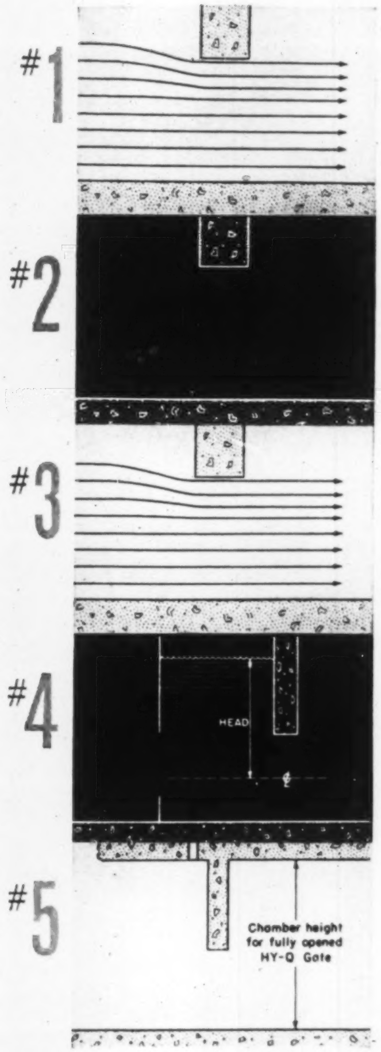
Water Yield and Reservoir Storage in the U. S.—U. S. Geological Survey, Washington 25, D. C. Free.

Probability Analysis Applied to a Water-Supply Problem—U. S. Geological Survey, Washington 25, D. C. Free.

#6

SPECIFY RODNEY HUNT
HY-Q SLUICE GATES WITH FLUSH-BOTTOM CLOSURE
and get these **6** design advantages

HY-Q® Sluice Gates Mean Construction Economies



Because of the improved flow characteristics of the Rodney Hunt HY-Q sluice gate, a given volume of flow can be handled with a smaller gate size, narrower channel and lower channel walls than are required for a conventional gate. Thus there are often substantial economies effected in concrete construction. This improved flow is the direct result of the 5 other design advantages of the Rodney Hunt HY-Q sluice gate:

#1 HY-Q Sluice Gates Assure Maximum Flow

#2 HY-Q Sluice Gates Assure Complete Drainage

#3 HY-Q Sluice Gates Eliminate Interference with Flow

#4 HY-Q Sluice Gates Assure Maximum Hydraulic Gradient

#5 HY-Q Sluice Gates Permit Lowest Possible Invert

All these advantages derive from the design of the resilient seal fastened to the bottom of the disc. The seal extends the full width of the disc and provides a cushioned closing at the stop bar flush with the invert.

The HY-Q gate offers unmatched design flexibility and construction economy for water control projects . . . with hundreds of gate sizes available from 6" x 6" to 144" x 144" and larger to meet your specific design requirements.

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a product of
RODNEY HUNT MACHINE CO.
Water Control Equipment Division
85 Water Street, Orange, Mass.
Serving water control engineers with equipment and engineering

RODNEY HUNT

Worthington pavers pour over
½ million yds.
of concrete to set **"Best maintenance**

Lightening fast charging. Skip travels from ground to charging position of 56 degrees slope in just 6½ seconds.

record we've ever had"

say Nolan Bros.

Nolan Bros., Inc., are turning the plains near Wichita Falls, Texas, into a huge new Strategic Air Command base. The general contractors are using 4 Worthington pavers regularly—one on a standby basis—to pour more than 530,000 cu. yds. of concrete needed for this latest link in America's defenses.

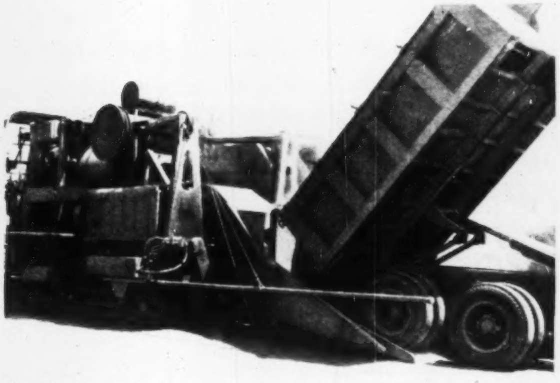
Despite temperature extremes brought on by boiling summer sun and icy blasts from Texas' famous northers, the Worthington pavers operate 10 hours per day, 6 days a week to ready the tremendous network of runways, warm-up aprons, and alert strips known as Sheppard AFB. And when the pavers are laying concrete strips from 19 to 30 inches thick, Nolan Bros. are sure of steady, reliable performance from the Dual Drum Pavemaster machines. "Best point about the Worthingtons," says Chuck Nolan, partner of the contracting firm, "is their low maintenance costs. Since they've been on the job costly repair bills are a rarity."

In addition to the proven reliability and speed of the Dual Drum Pavemaster pavers, Worthington now presents an entirely new Buyer-Service Plan to insure exact paver performance and customer satisfaction:

1. Before you buy . . . Worthington tailors a financial plan to meet your individual needs.
2. After you buy . . . Worthington invites you to send 1 man to our factory in Plainfield, N.J., for a 3-day equipment manufacturing checkout with all his expenses paid.
3. After you buy . . . Worthington sends a serviceman to check out the paver on its original operating site for an entire week.

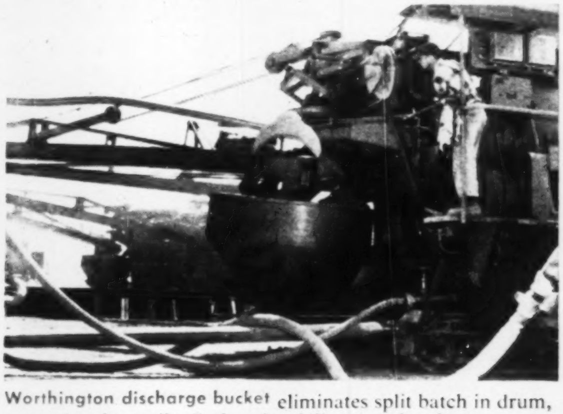
For the full story on the money-making features of Worthington pavers write for descriptive bulletin 1270-B1. And for more information on the new 3-Point Check-Out Plan, contact Worthington Corporation, Section 65-11, Plainfield, N. J. In Canada: Worthington (Canada) Ltd., Brantford, Ont.

WORTHINGTON

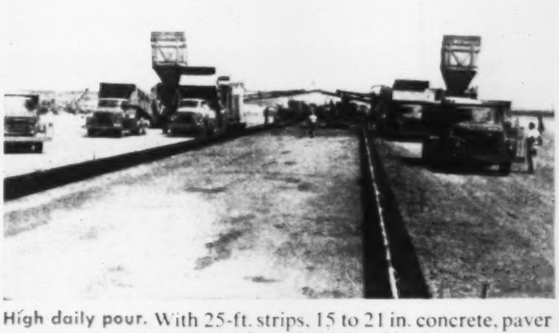


Fed by fleet. 25 batch trucks, each carrying four batches, work on fast schedule to maintain rapid paver operation.

Hydraulically controlled booms and buckets operate smoothly to spread concrete faster, more evenly for higher daily pour.



Worthington discharge bucket eliminates split batch in drum, saves time by easily discharging full or part batches.



High daily pour. With 25-ft. strips, 15 to 21 in. concrete, paver averages daily 1800 lineal feet (3600 ft. of highway paving).

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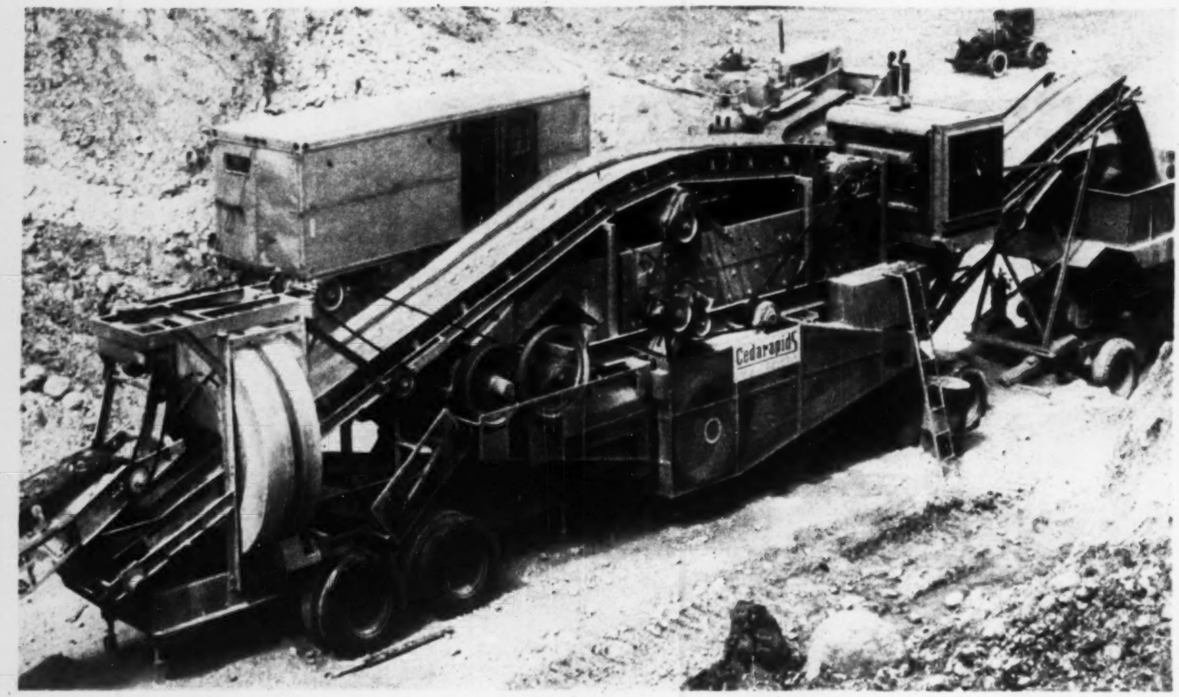


Crushing and screening plant boosts capacity 40 to 100% over its predecessor

Crusher Handles 500 Tons Per Hour

A 12x36-in. twin jaw crusher boosts capacity of the new Cedarapids tandem crushing and screening plant to up to 500 tons per hour of one to four product sizes.

The plant—called the Super Commander—follows the design of the smaller Commander, but it has 40% to 100% more crushing capacity, the manufacturer says.

Screening capacity is also up 40%, thanks to a 48-in.x14-ft horizontal tripled deck vibrating screen. To handle the greater circulating load, the elevating return wheel is 12 in. larger in diameter and 5 in. wider, and the conveyors are 36 in. to 6 in. wider.

When necessary for portability, the machine can be fitted with a third air-suspension axle. The axle carries a load equal to the tandem axles and reduces axle load to under 18,000 lbs. Weight on each of the three axles is under 16,000 lbs with the feeder and hopper removed.

Either a plant-mounted feeder and hopper or a ground level feeder and hopper driven by a swivel drive will feed the unit.

Other design features include simplified drives, new belt wipers and an optional pre-screening attachment that allows the plant to produce 100% more crushed material. The plant also takes a spray bar washing attachment to produce washed aggregate and a sand ejector screw to handle wet or dry sand. Iowa Manufacturing Co., Cedar Rapids, Iowa.

Parking System Doubles Lot Capacity

"Auto-Pack" can double the capacity of parking lots and garages. The mechanical system makes possible the storage of two cars in virtually the same ground space needed to park one car, according to the manufacturer.

Here's how it works.

At a parking lot equipped with the units, the motorist enters an access lane and drives up on an Auto-Pack rack parallel to an empty parking slot. When the front tires of the car rest on the stop at the end of the rack, the attendant turns off the car motor.

He switches on a 110 volt electric motor, which activates a hydraulic jack on the rack that tilts the car to a 30 degree position.

The attendant then manually pushes the rack with the car into the predetermined storage spot with no more effort than it takes to close a garage door.

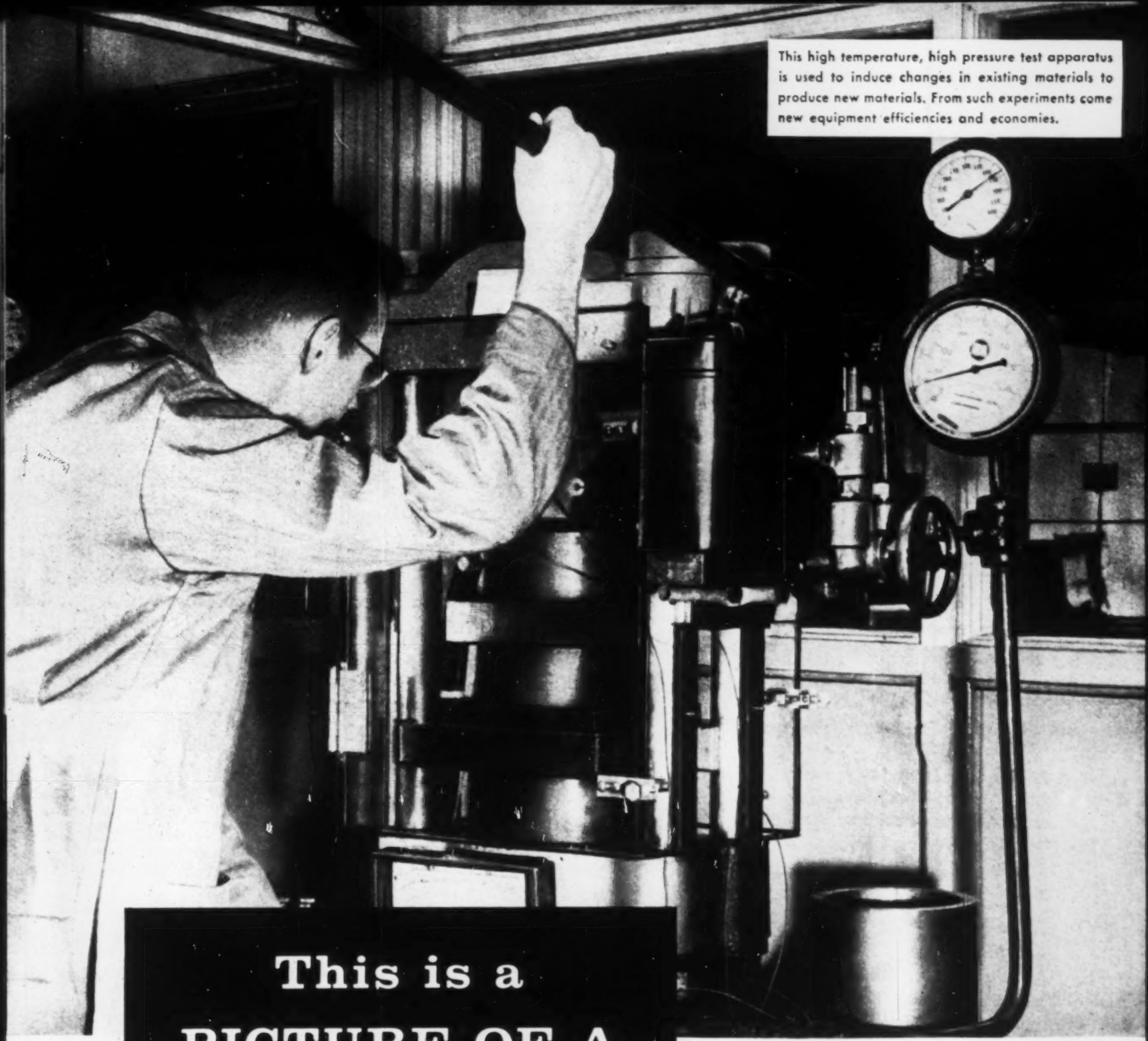
The rack rides on a double rail positioning track with four ball bearing rollers. The entire parking operation is completed in 40 seconds, claims the manufacturer.

When the motorist reclaims his car, the attendant pulls the rack from the storage slot into the access lane, lowers the ramp, backs the car off and the motorist is on his way.

Auto-pack also is claimed to reduce the possibilities of car damage that can occur with conventional parking facilities. No car can come in accidental contact with another, once positioned on the rack.

It is estimated that each rack will sell for from $1,000 to $1,200. They are available for new or existing parking areas. All American Engineering Co., Wilmington, Del.

(New *Products continued p. 222*)



This high temperature, high pressure test apparatus is used to induce changes in existing materials to produce new materials. From such experiments come new equipment efficiencies and economies.

This is a PICTURE OF A NEW PRODUCT

Products for Industry: Electrical Generation, Distribution and Utilization Equipment; Pumps; Compressors; Mechanical Power Transmission Equipment; Processing Machinery; Motors and Control; Water Conditioning Systems, plus Materials Handling Equipment.

No, it won't be available tomorrow—or even next year. But Allis-Chalmers is working on it *now* to meet the needs of public works in the future.

Continuous Research — at Allis-Chalmers — of materials, processes and equipment paces product development and technological advancement. *Creating a continuous flow of new equipment, improving existing products, helping public works and industry achieve new efficiencies and economies* — these are the assignments of Allis-Chalmers research.

Thus research contributes to establishing a pronounced preference for Allis-Chalmers public works equipment. But it's only part of the story. Single-source availability of "teamed" equipment, invaluable engineering help and outstanding service facilities are other important factors.

Talk to your A-C representative soon about your requirements. Or write Allis-Chalmers, Milwaukee 1, Wisconsin.

Plan to stay ahead... MODERNIZE!

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

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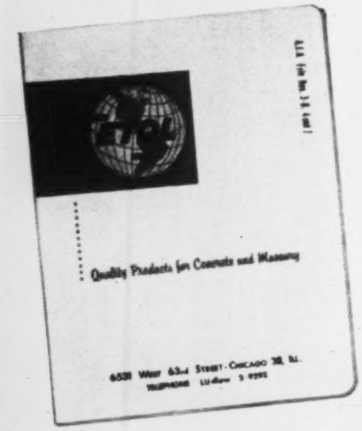
A-1004-PW

do you have this manual?



The new **Tretol** Technical Manual illustrates and describes the use of **Tretol** Concrete Surface Treatments, Admixtures and Waterproofing and Dampproofing Compounds in concrete and masonry construction.

Tretol products are designed to improve, protect, and impart desirable new qualities to concrete and masonry. Each of the more than 33 formulations in the **Tretol** line has been tested and proven in projects all over the world.

To learn more about the many exclusive advantages **Tretol** products can bring to your jobs, write for the Manual today. There's no obligation.

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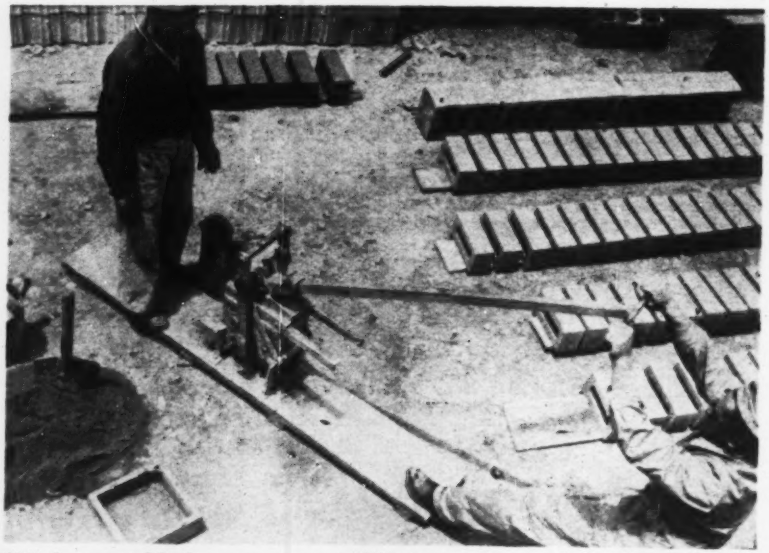
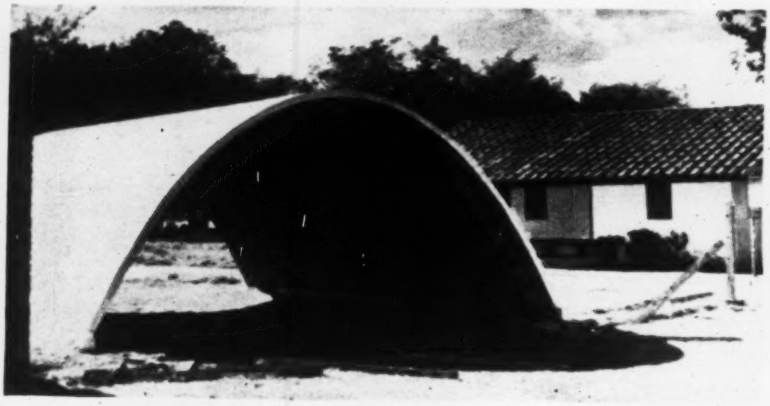


This low-cost block press, operated by two men, produces . . .



. . . soil-cement blocks for use in small buildings.

Block Press Squeezes Costs, Too

For an investment of under $200, a crew of two can turn out 300 to 500 soil-cement blocks per day with the Cinva-Ram Block Press. It's a welded-steel unit so simple there's never been a return from any of 3,000 built for low-cost housing work in foreign countries. It requires only an 80-lb force on the lever to compress the blocks.

Now the press is being manufactured for sale in the continental U. S. It costs $155, FOB, Richmond, Va. It was first developed at the Inter-American Housing Center in Bogota, Columbia. IBEC Housing Corp., New York City, has acquired world rights to the press and authorized a manufacturer and licensee for the United States and Canada.

Here's what it takes to produce soil-cement blocks with the machine:

- The 128-lb. Cinva-Ram Block Press, mounted on a heavy plank.
- Any stable soil, free of organic matter, and with a good sand content.
- Cement, figured at the rate of only 8%, or about 100 lbs per 150 blocks.

And here's what you get:

- Two block types, a tile and wall unit. And wall units may be cast either as solid blocks or semi-hollow. Tiles lay up 1½ x 6 x 12 in.; wall blocks lay up 4 x 6 x 12 in.
- Compressive strength varies from 200 to 500 psi depending on the soil used, ample for wall bearing structures one story high.
- Blocks cost only 1.5 cents each. RICHMOND ENGINEERING CO., SEVENTH & HOSPITAL STS., RICHMOND, VA.

(New *Products continued p. 224*)

Allis-Chalmers introduces . . .

New vertical turbine pump – the prime pump that needs no priming

Now Allis-Chalmers brings its 85 years of pump experience to the short-coupled vertical turbine-type field. This addition not only rounds out industry's most complete single source for pump installations, it offers many advantages wherever liquids are to be pumped. Standard sizes for heads up to 400 ft or more, and capacities ranging from 20 to 8000 gpm.

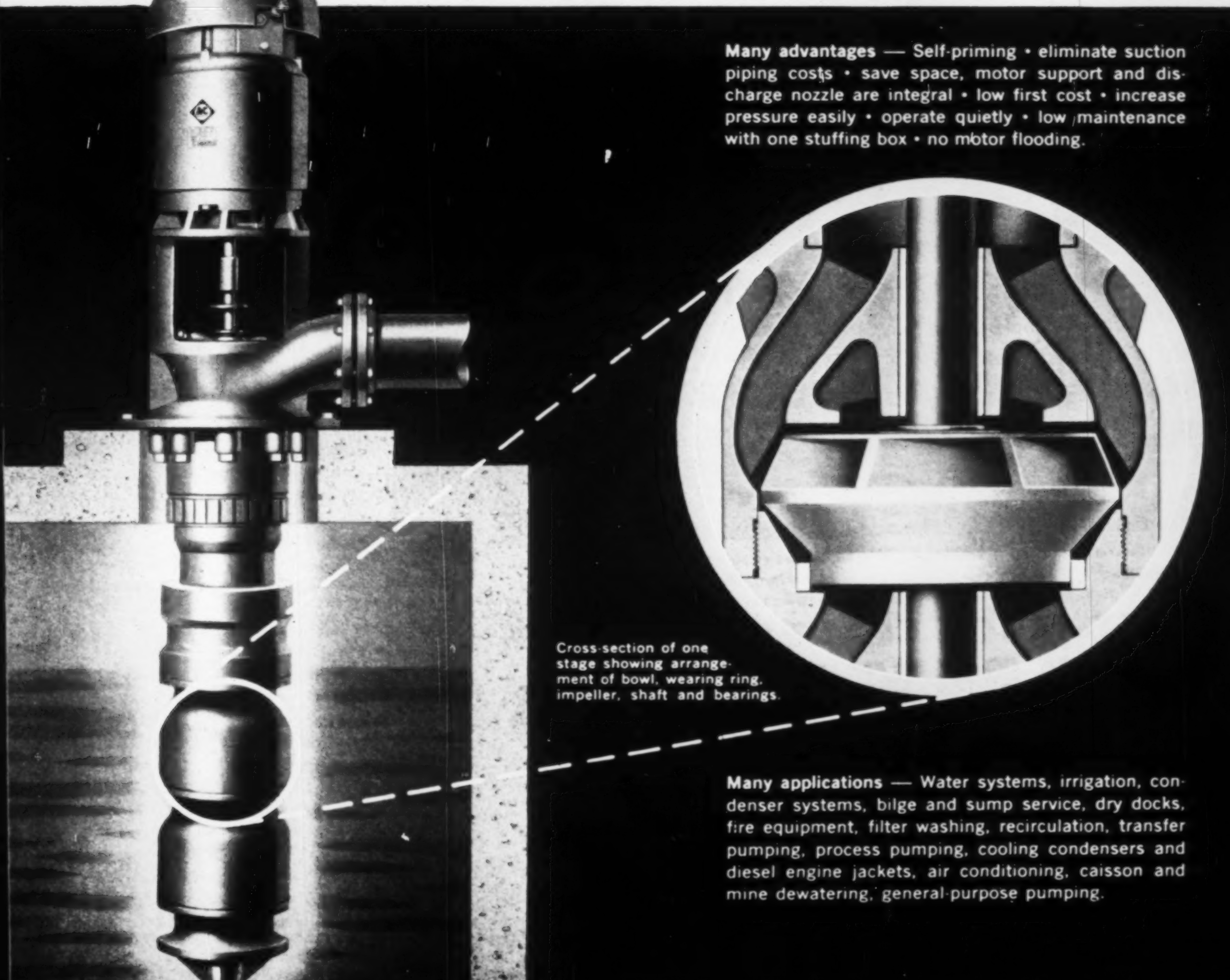
Pressures can be increased by simply adding a stage to the existing pump without increasing space requirements. Equipment and installation costs are low. Motor and discharge nozzle are supported by a single, small foundation. There's no need for suction pipe, interlock controls or priming equipment. Allis-Chalmers hollow-shaft motors remove the danger of open couplings.

Allis-Chalmers pump experts will be happy to tell you about this new addition to an outstanding line. Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Plan to stay ahead... MODERNIZE!

ALLIS-CHALMERS A-C

A-1163-GI

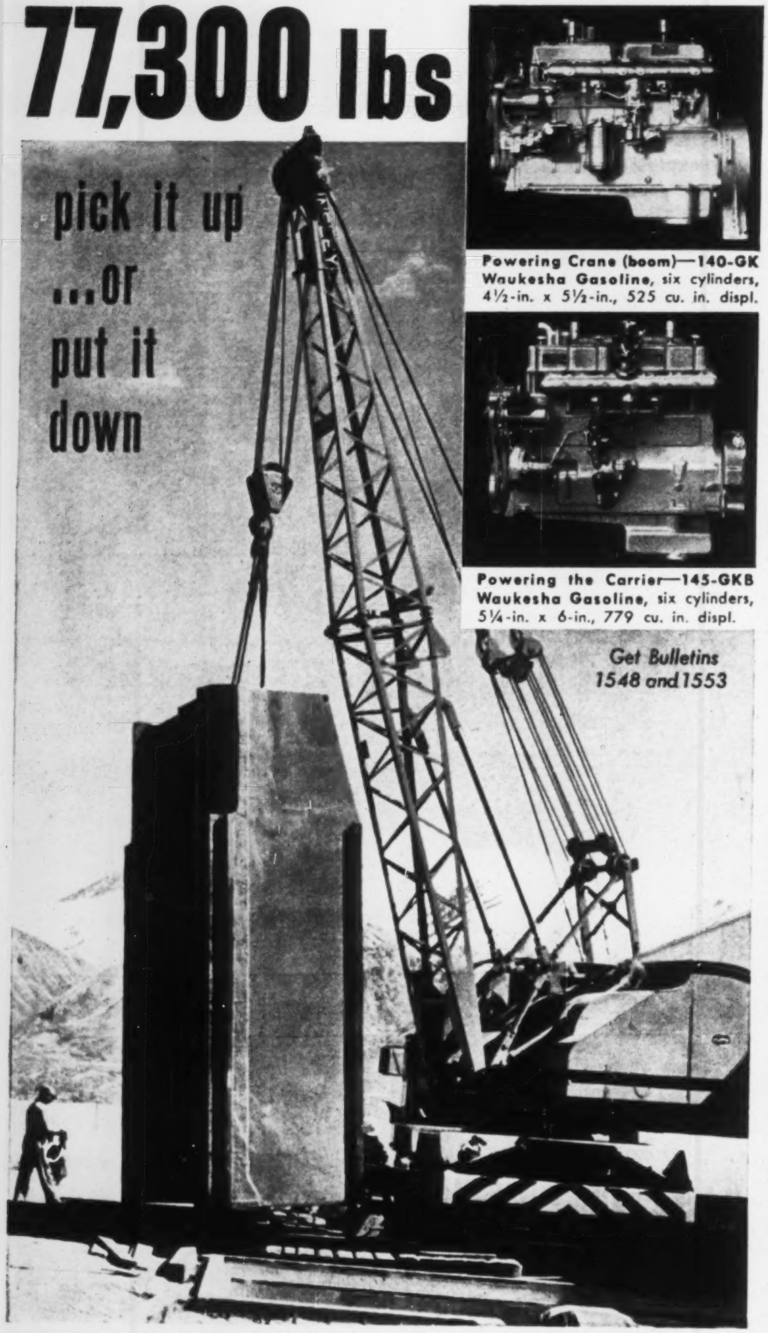


Many advantages — Self-priming • eliminate suction piping costs • save space, motor support and discharge nozzle are integral • low first cost • increase pressure easily • operate quietly • low maintenance with one stuffing box • no motor flooding.

Cross-section of one stage showing arrangement of bowl, wearing ring, impeller, shaft and bearings.

Many applications — Water systems, irrigation, condenser systems, bilge and sump service, dry docks, fire equipment, filter washing, recirculation, transfer pumping, process pumping, cooling condensers and diesel engine jackets, air conditioning, caisson and mine dewatering, general-purpose pumping.

77,300 lbs



Powering Crane (boom)—140-GK Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displ.

Powering the Carrier—145-GKB Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displ.

77,300 lb. section of press, for fabricating Bomarc surface to air missile parts, was picked up with 40′ boom at 18′ radius over the side and swung to rear, boomed out to 24′ radius and lowered 10′ to its base. Waukesha 140-GK engine with torque converter powers crane boom.

INSLEY TRUCK CRANE does it with
WAUKESHA
POWER

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES
Factories — Waukesha, Wisconsin, and Clinton, Iowa 437

Dredging Agitator Designed To Increase Production

The Aggretator, a dredging agitator for increased dredging production, is available for 6-, 8-, 10-, and 12-in. suction lines.

Double-edged teeth of the device cut through clay seams, making it possible to pump full depth of the deposit. Face and side plates push large rocks away from the suction nozzle. The Aggretator also can be used to loosen cemented deposits.

These claims for the dredging attachment are coupled with those of easy installation and small initial cost.

Standard equipment includes hydraulic motor and reservoir, four-way valve, two 3-in. hydraulic hoses, slip-on weld flange and hydraulic cylinder shield. Van Gorp Mfg., Inc., Pella, Iowa.

Ladder Trencher Makes Tractor Run at 'Creep'

The Auburn Gear-Draulic Trencher is made for use with International Harvester 340 and 460 utility tractors. It will dig trenches 6-to-14-in. wide and up to 6 ft deep at speeds up to 800 ft per hour, the manufacturer claims.

It has a forward propulsion drive that uses a special power take-off. Power is transferred from the tractor through a combination hydraulic drive and speed reducer, to a geared spacer that returns the power to the tractor's power train at a "creep" speed.

The trencher has a non-clogging digging ladder with alternate right and left cutting teeth that lift the dirt to ground level where augers put it on both sides of the trench. Auburn Machine Works, Inc., Auburn, Neb.

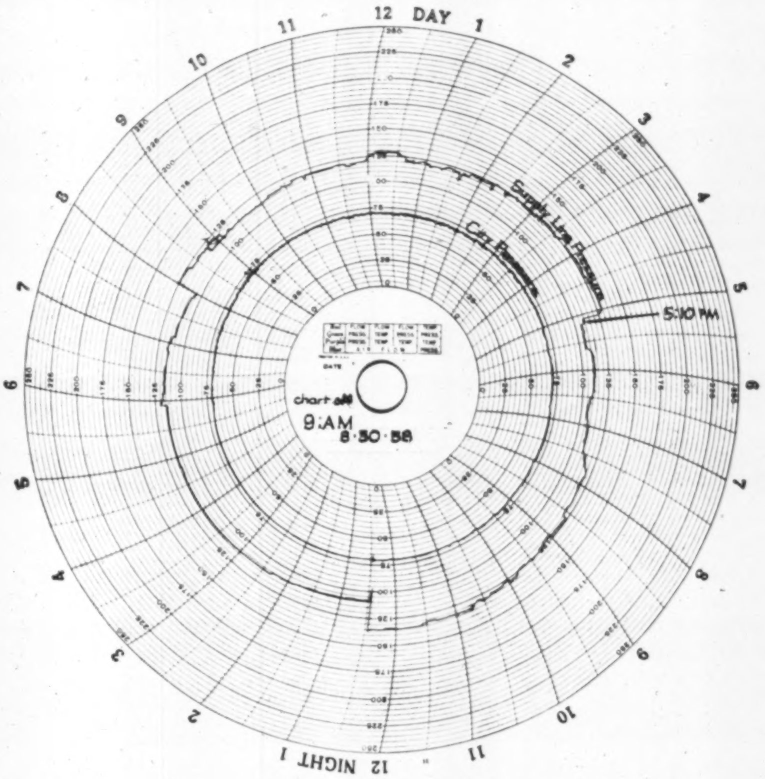
Now There's an Engine That Thinks for Itself

The International U-450 is an automatically controlled engine that can be set up to start by a beam of light, moisture in the ground, radio signal, time clock or liquid levels or pressures.

The six-cylinder unit—which operates on gasoline, LPG gas or natural gas—develops 134 maximum hp at 2,200 rpm. It is designed to start, accelerate, stop and engage a clutch, throttle or choke—all with manual attention.

The engine not only makes its own water by condensing exhaust vapors, but, should a failure occur, it analyzes the cause and indicates what caused the failure, the manufacturer states. International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

(New Products continued p. 226)



Actual pressure recording meter chart shows how City pressure remains constant despite variations in supply line pressures over a 24-hour period. **EXAMPLE:**

Time	Supply Pressure	Flow Rate	City Pressure
5:00 p.m.	135 psig	8.9 MGD	70 psig
5:10 p.m.	105 psig	15.0 MGD	70 psig

Commissioner Hugh Brewer says: "We are pleased with the continuous, dependable service of these Rotovalves."

"They are the best control valves I ever saw," testifies Water Superintendent John Luce.

Ft. Smith Relies On Allis-Chalmers ROTOVALVES *For*

CONSTANT WATER PRESSURE

Since 1949, the City of Fort Smith, Arkansas, has used Allis-Chalmers Rotovalves exclusively on pressure regulating service. Two 16" hydraulically-operated Rotovalves, installed on a 23-mile gravity supply line from the filter plant to the City, have given uninterrupted service. City water pressure remains constant regardless of supply line pressures or rate of flow (demand) in the system.

Manually-operated A-C Rotovalves are also installed in Ft. Smith's transmission and distribution mains. In the event of an emergency, hydraulic imbalance and mechanical design of these valves permit fast, easy operation by one man. Rotovalves installed by the Ft. Smith Water Department have a perfect service record with only nominal maintenance.

There is a full line of Allis-Chalmers Rotovalves, ball and butterfly valves to meet all requirements in water service. For complete information, call your A-C valve representative, or write Allis-Chalmers, Hydraulic Division, York, Pennsylvania.

Rotovalve is an Allis-Chalmers trade name.

Hydraulic Division

RESEARCH | DESIGN
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ENGINEERING | FABRICATION

Rotovalves • Ball Valves • Butterfly Valves • Free-Discharge Valves
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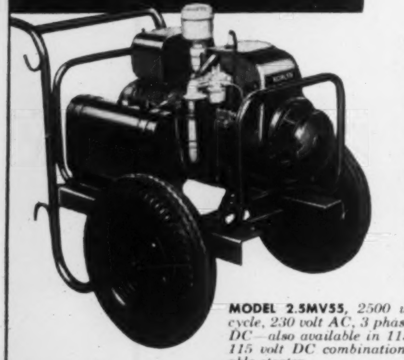
Save time . . .
reduce costs with

KOHLER ELECTRIC PLANTS



This lightweight, cart-mounted 2500 watt high cycle Kohler electric plant will provide power for both your 180 cycle and standard 115 volt DC power tools . . . Roll it anywhere on the job, ready for use — increase profits by preventing delays . . . Plug-in receptacles for easy, quick load connection . . . Fast, reliable starting, 4-cycle, air-cooled performance . . . 115 volt, 115/230 volt, AC, 60 cycle models also available . . . Sizes to 100 KW gasoline and diesel. Write for folder E-3.

MODEL 2.5MV55, *2500 watts, 180 cycle, 230 volt AC, 3 phase, 115 volt DC—also available in 115 volt AC, 115 volt DC combination. Retractable starter.*

KOHLER CO.
Established 1873
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KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings
Electric Plants • Air-cooled Engines • Precision Controls

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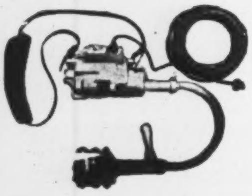
"BERG"
CONCRETE SURFACER
MODEL A



"Berg equipment is used extensively for surfacing and finishing applications on concrete construction.

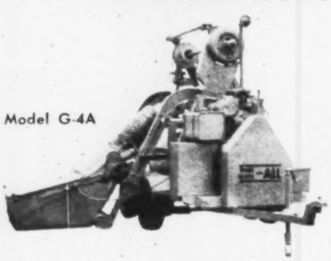
The many "BERG" Models available permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

Do You Want to Shoot REAL CONCRETE?
. . . or will mortar do?
THERE IS A DIFFERENCE!



True Gun-All machines will shoot real concrete containing up to ½" rock aggregate . . . and they will apply up to nine cubic yards of this quality controlled concrete per hour. Other types of pneumatic guns shoot a sand and cement mortar. So, if your job calls for concrete, use a concrete gun—use True Gun-All. **Write for information about this money-saving gun.**

TRUE GUN-ALL EQUIPMENT CORP.
P. O. Box 2526 Tulsa, Okla.

CIRCLE 56 READER SERVICE CARD

Compressor Features Simplified Components

A self-propelled compressor, the 125 Tractair is designed to provide 125 cfm of free air compressed to 100 psi. It travels from job to job at speeds up to 15 mph; it can climb and work on a 2:1 slope.

A single-stage piston-type compressor is built integrally with a 42-hp engine. All gages are grouped on one panel for easy reading.

One crankcase, crankshaft, and pressure lubrication system serves both engine and compressor.

A line of attachments is available, including front-end loader, backhoe, TRAC-JAC AND MOBILDRILL. LEROI DIV., WESTINGHOUSE AIR BRAKE CO., MILWAUKEE 1, WIS.

Briefs . . .

- **Motor controllers**—Oil-immersed, explosion-proof, corrosion- resistant squirrel cage 2,000 volt to 5,000 volt motor starters are on the market. They are rated at 50-mva interrupting capacity and offer built-in short circuit protection to a motor or systems having a maximum 50-mva capacity. ALLIS-CHALMERS MANUFACTURING CO., MILWAUKEE 1, WIS.

- **Towing winch**—Simplified gearing and high-speed reverse are two of the features of a owing winch for Caterpillar D8 and D9 tractors with direct or torque converter drive. HYSTER CO., P. O. BOX 328, PEORIA, ILL.

- **Ice control spreader**—A spreader capable of covering two to four lanes is equipped with a chainless, beltless, flightless 24-in. conveyor. The unit can be operated by one man from the cab. HIGHWAY EQUIPMENT CO., DEPT. H24-5, 616 "D" AVE., N.W., CEDAR RAPIDS, IOWA.

- **Electric motors**—A series of drip-proof electric motors in NEMA rerated frame sizes, from ½ hp at 900 rpm, through 150 hp at 3,600 rpm, with frames 182 through 445 URS. LIMA ELECTRIC MOTOR CO., DEPT. 52, LIMA, OHIO.

- **Logging lift truck**—A gasoline-powered lift truck for handling logs and lumber has a capacity of 16,000 lb to 24,000 lb. The unit has four-wheel drive, four wheel brakes, power steering, four speeds forward and backward and a short turning radius. PATRICK EQUIPMENT CO., 1250 CHARLES ST., VANCOUVER, B. C.

(New Products continued p. 230)

bridges *now span gap between* superior construction and lower costs

...with RB&W High Strength Bolts

Largest new bridges now have members connected with high strength bolts . . . for economy and speed of installation and for greater strength under dynamic as well as static loads.

Railroad bridges also, long plagued by rivets loosening from severe vibration, are being built to avoid future maintenance problems and to save money. It started when the AAR arranged with several railroads to replace rivets with high strength bolts in troublesome locations. With subsequent inspection, (1) the bolts showed no cracked paint, rust or other signs of slippage of members; (2) bolts retained their original clamping force. In one recent repair project, only 10 manhours were required to bolt trestle section, as compared to 30 manhours for riveting.

And for overpass bridges, too, it's faster erection at lower cost per ton of installed steel when connected with RB&W High Strength Bolts. Typical 4-lane highway bridge was erected in 40% of the time and with ½ the manpower which riveting would have required. "Bolts a necessity if schedules are to be met...almost always an economic advantage also," said the construction coordinator.

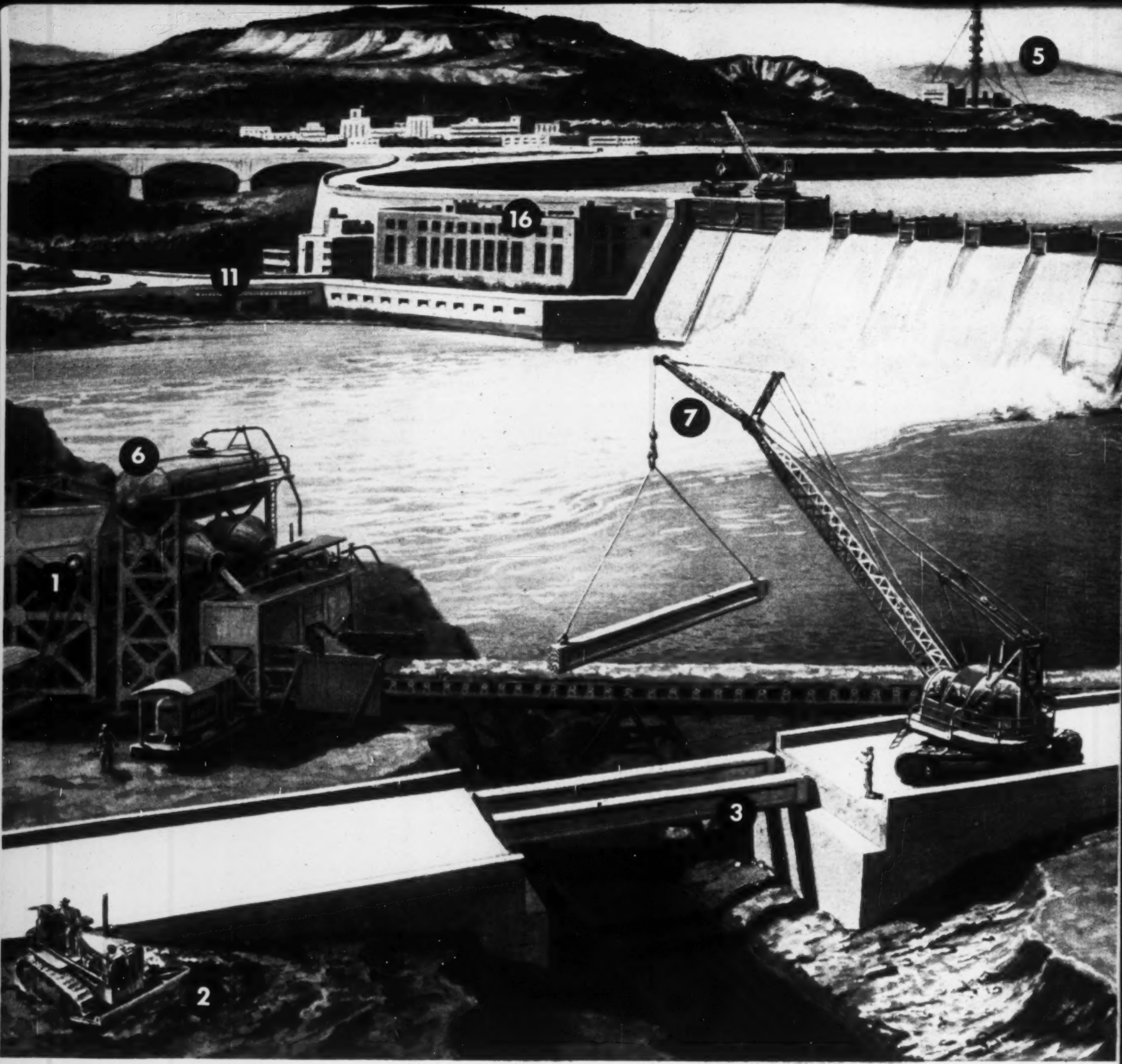
Need more be said? If you're putting up a bridge or building, top it with more quality and economy . . . use RB&W High Strength Bolts. Bulletin HS-1 tells more. Write Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

RB&W
115th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver, Fargo. **Distributors** from coast to coast.

CIRCLE 227 READER SERVICE CARD

CIRCLE 228 READER SERVICE CARD→


5
16
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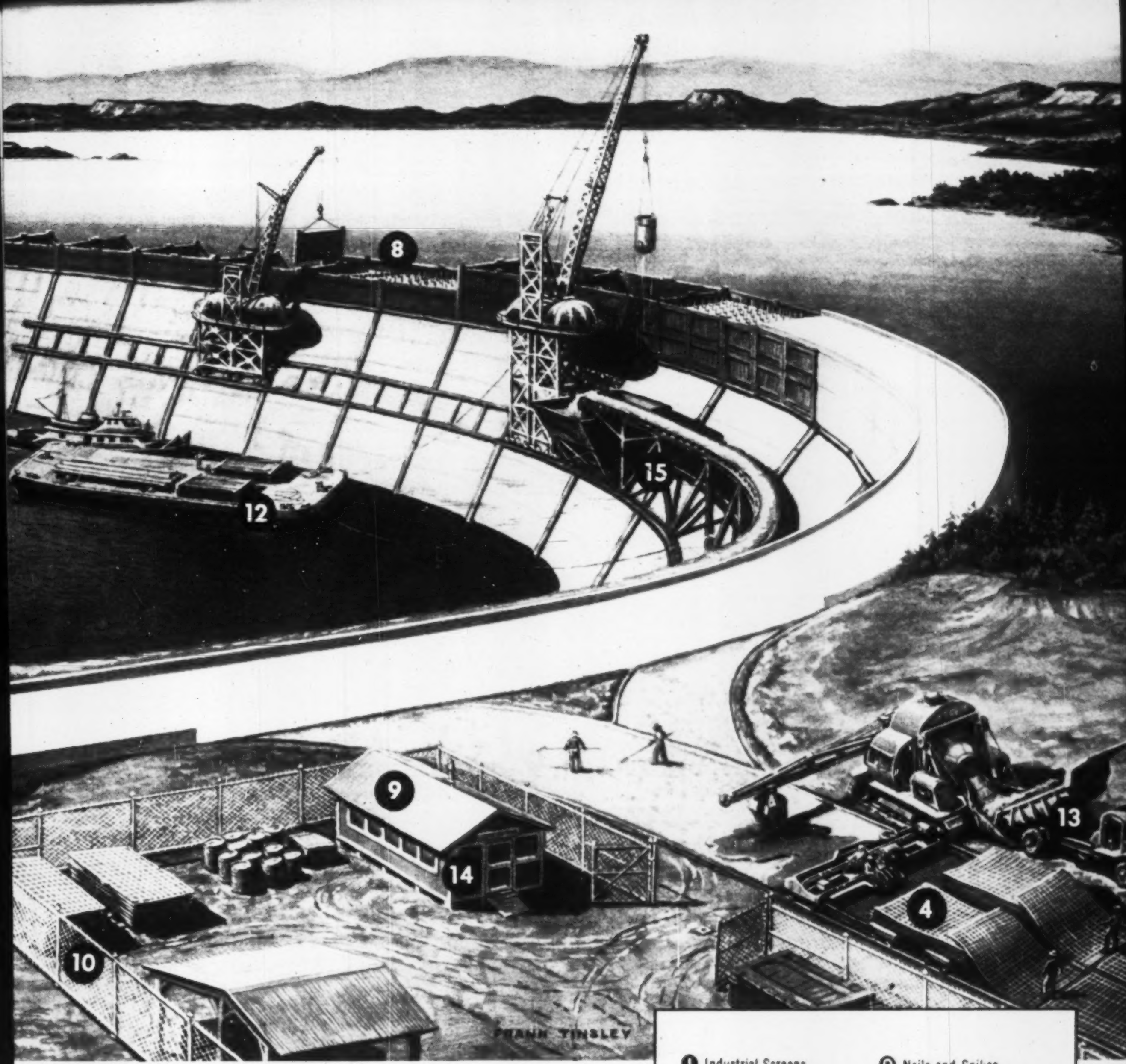
On major construction projects

...you'll see many

CF&I STEEL PRODUCTS



A modern dam is a marvel of engineering and construction skill, and an essential structure in our present-day economy. Man's ingenuity puts many types of material and equipment to use in the building of dams—with *steel* playing a vital role. Products made of steel do the earth-moving, lifting, hauling and erection jobs . . . steel is the backbone of the dam itself . . . and auxiliary equipment and structures are largely made of steel. For these myriad uses, contractors demand *dependable* steel products.

That's why—on dam projects and other construction sites—you'll see many different CF&I Steel Products. They *are* dependable because CF&I makes its own steel and performs every manufacturing step, building top performance into each product through rigid quality control procedures born of careful research and long experience.

If you use steel in any form, it will pay you to contact CF&I—a single source for many dependable steel products.

- ① Industrial Screens
- ② Cutting Edges
- ③ Prestressed Concrete Strand and Wire
- ④ Welded Wire Concrete Reinforcing Fabric
- ⑤ Galvanized Steel Strand
- ⑥ Flanged and Dished Heads
- ⑦ Wire Rope and Slings
- ⑧ Concrete Reinforcing Bars and Tie Wire
- ⑨ Nails and Spikes
- ⑩ Chain Link Fence
- ⑪ Welded Steel Girders
- ⑫ Carbon and Alloy Steel Plate
- ⑬ Springs
- ⑭ Insect Wire Screening
- ⑮ Rails, Spikes, Track Bolts and Tie Plates
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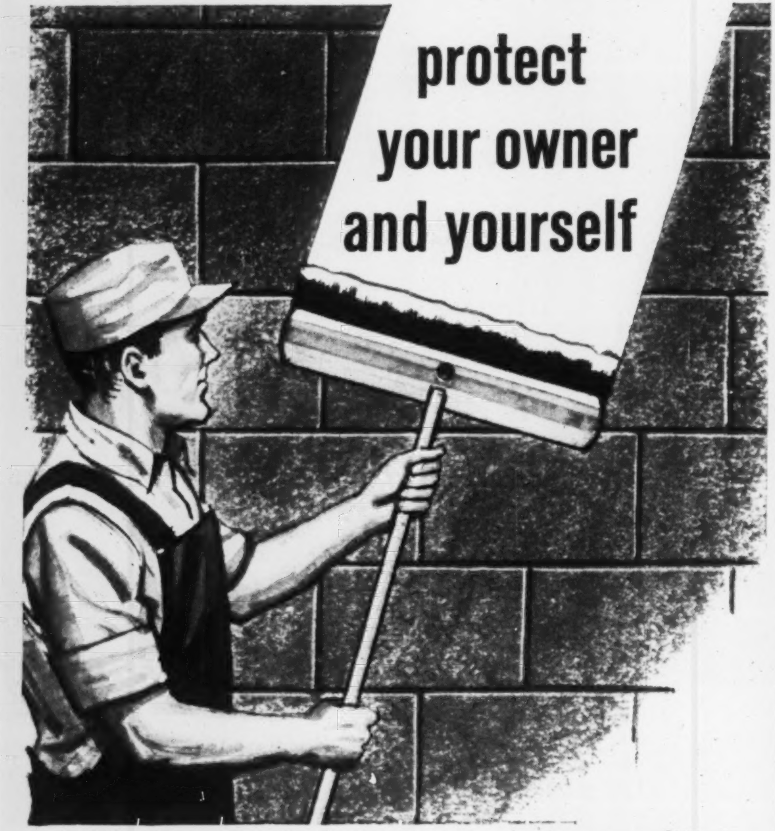
In the East: **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
CF&I OFFICE IN CANADA: Montreal • **CANADIAN REPRESENTATIVES A**[illegible] • Edmonton • Vancouver • Winnipeg

CF&I STEEL



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Box X(2) New Eagle, Pa.

Plants at New Eagle, Pennsylvania and Centerville, Indiana

• Concrete patch—"Epoxicrete 811" is an epoxy compound developed for renewing concrete and asphalt surfaces chipped and spalled from heavy traffic. It is waterproof and resistant to oils, alkalis and acids, the maker says. One gallon covers 25 sq ft to a $\frac{1}{16}$-in. thickness. COAST PRO-SEAL & MFG. CO., 2235 BEVERLY BLVD., LOS ANGELES 57, CALIF.

• Refuse chute—Large, round telescoping metal tubes, with intake openings adjustable to any floor height provide efficient waste and refuse disposal on building and demolition jobs. After the job is finished, the chute is quickly demountable for transfer to another project. WILKINSON CHUTES, INC., 619 E. TALLMADGE AVE., AKRON 10, OHIO.

• Beam form saddle—Stirrup-type wire beam saddle with welded bottom-plate sills is designed for forming bridge decks or any concrete slab over structural steel. The saddle eliminates variations in deck elevations due to "biting" of wire into lumber joist edges. UNIVERSAL FORM CLAMP CO., 1238 N. KOSTNER, CHICAGO 51, ILL.

• Pipe rack clamps—Kee-Klamps are slip-on pipe fittings equipped with case-hardened, cupped, hexagon set screws. Each will withstand a vertical load of 4,000 lb, says the manufacturer. There are 56 types available for pipe from $\frac{3}{8}$ to 2 in. GASCOIGNES INDUSTRIES, INC., 1329 EAST 289 ST., WICKLIFFE, OHIO.

• Air compressors—"Challenger" air compressors, a line priced in a lower range than standard Champion compressors, are available in a range of 1 to 3 hp. with 5.1 to 12.25 cfm displacement. Motors, switches, controls and tanks are exactly the same as those used in the more expensive line, the producer states. CHAMPION PNEUMATIC MACHINERY CO., PRINCETON, ILL.

• Concrete inserts—For precast concrete work, PD zinc alloy Concrete Inserts provide threaded seats for all standard trade fixtures without rust staining or an excessive number of nail-down holes. Adapter plug for steel forms works with either machine screws, steel strap or suction cups. STAR PRECISION DEVICES, MOUNTAINVILLE, N. Y.

• Lubrication equipment—A line of spring-powered, automatic retracting reel and hose assemblies for delivery of lubricants, gasoline, air and water. LINCOLN ENGINEERING CO., 4020 GOODFELLOW AVE., ST. LOUIS 20, MO.

(New Products continued p. 232)

This Blaw-Knox, 3 compartment, 150 yard, aggregate batching plant is the first stop in a high speed, two-stop batching operation at Sawyer Air Force Base. Total project will require 300,000 cubic yards of concrete.

"Our Blaw-Knox Automatic Plant increased production 50%, cut our batching cost 25% per cubic yard"

"We load 2900 to 3000, 1¼ cubic yard batches of concrete a day," reports Arnold Anderson, Project Manager, Gust K. Newberg Construction Company and Hoyle-Newberg Construction Company, a Joint Venture. "Formerly, a manually operated aggregate batching plant took two minutes to load a truck. Then an additional three minutes were needed at the manual cement plant for loading. With our Blaw-Knox Automatic Batching Plant, this time has been cut to one minute at each stop . . . and human error is avoided by the guaranteed accuracy of the weighing and recording units.

"Elimination of on-the-job maintenance has made our high production record possible," he continues. "Other than ordinary maintenance procedures, accomplished when the plant is not in use, we've had no maintenance problems at all. We've been consistently operating on a ten hour day, six day week schedule."

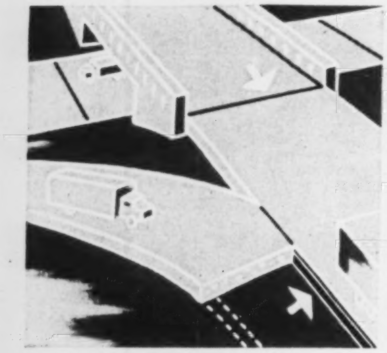
Rigid construction schedules and ever-tightening specifications demand high speed, automatic batching. Let Blaw-Knox engineering and know-how build your production and profit. Contact your Blaw-Knox distributor about a unit "tailored" to fit your operation.

BLAW-KNOX

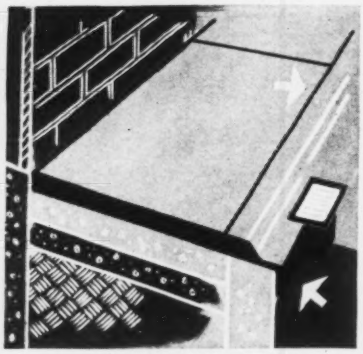
BLAW-KNOX COMPANY

Construction Equipment • 300 Sixth Avenue • Pittsburgh 22, Pennsylvania

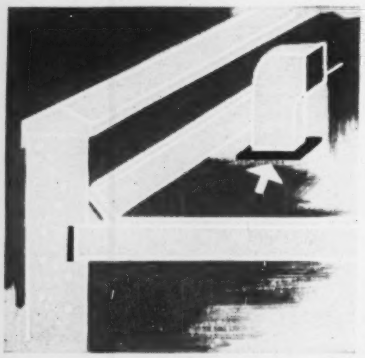
CIRCLE 231 READER SERVICE CARD



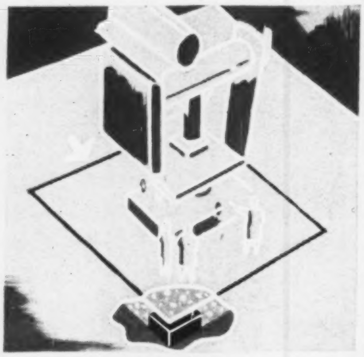
1. Concrete Expansion Joint Filler: for bridge approaches, airports, intersections, abutments, highways, dams.



2. Concrete Expansion Joint Filler: for walks, curbs, gutters, streets, driveways, slab floors.



3. Roof Deck Expansion Joint: forms tight, yet resilient bond at all junctures with gypsum or concrete deck.



4. Vibration Isolation: under heavy machinery, minimizes vibration transmission. Tight, flush joints. No maintenance.

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BITUMINOUS IMPREGNATED FIBERBOARD

Does the job best!

25 years of job-proved performance have made Flexcell Board "1st Choice Across America!" Resilient, yet tough, rigid, non-extruding . . . dimensionally stable. Water-resistant. Not affected by heat or cold. Economical, efficient, easy-to-use!

Your Flexcell Distributor is equipped to fabricate shapes and strips to your specifications. Call him!

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• **Free special slide rule**—A slide rule for figuring vibrating screen capacities is said to give, in a few seconds, tons per hr per sq ft through screen cloth and capacity of any size of screen. It takes into consideration kind of material, size of screen openings, percentage of oversize in the feed, and other necessary factors. SMITH ENGINEERING WORKS, MILWAUKEE 1, WIS.

• **Pipe wrench**—A self-adjusting wrench features a sliding lower jaw that automatically tightens its grip as more force is applied. It releases on the backstroke. WHEELER MFG. CORP., ROSS ROAD, ASHTABULA, OHIO.

• **Curing paper**—A white, plastic-coated reinforced paper is available for curing concrete. Comes in standard widths from 9½ to 25 ft. AMERICAN SISALKRAFT CORP., ATTLEBORO, MASS.

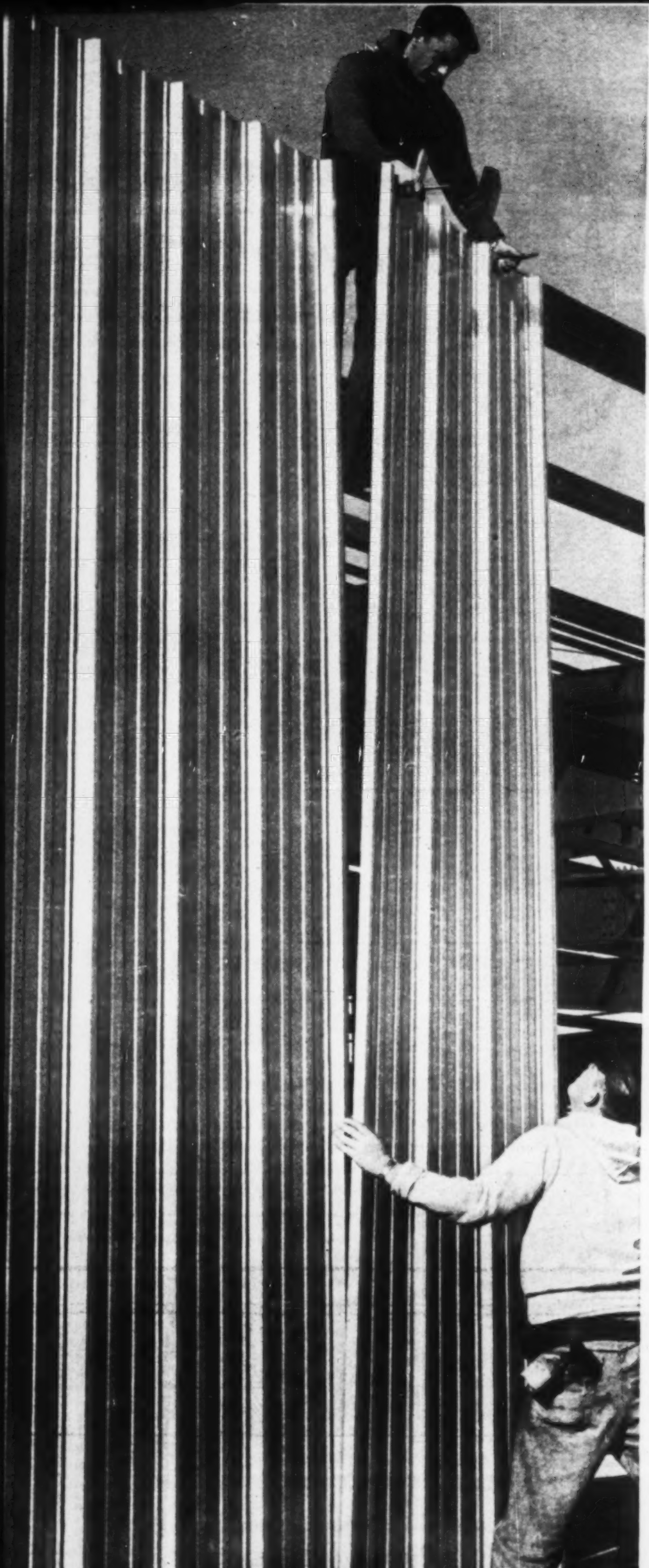
• **Concrete saw**—The Concut CP-369 concrete saw utilizes an optional center mount blade position. Unit is powered with a 36-hp engine. A blade-saver switch stops the blade when water pressure drops. CONCUT SALES INC., 1845 BELCROFT AVE., EL MONTE, CALIF.

• **Portable dredge**—The drive system for the Hydra-Drive portable dredge is said to give high power with variable speed swing and cutter at low maintenance. A ladder with removable sections is provided for efficient digging at variable depths. Said to be easily assembled in two days. Available in 8-to-18-in. sizes on lease or sale. AMERICAN MARINE & MACHINERY CO., P. O. BOX 1150, NASHVILLE, TENN.

• **Transmissions**—The Model 5-G-1220 heavy-duty transmission is a five-speed, high-capacity unit for operation in earth-moving equipment, including prime movers pulling scrapers of 12- to 14-cu yd capacity. Weight is 752 lb; length $31\frac{7}{32}$ in. FULLER MFG. CO., KALAMAZOO, MICH.

• **Portable electric plants**—Two models of electric plants, a 2,500-watt, 180-cycle, three-phase, 230-volt AC and 115-volt DC unit; and a 250-watt, 180-cycle, three-phase 115-volt AC-DC unit, mounted on rubber-tired carts to power portable electric tools at construction sites. KOHLER CO., KOHLER, WIS.

• **Concrete buckets**—Semi-automatic concrete buckets, available in sizes from ½ cu yd to 8 cu yd, that can be opened and closed by the crane operator. G. G. MORIN CO., 832 DEWEY ST., WEST SPRINGFIELD, MASS.



A NEW STRONGER COVER

The Bold and Beautiful look for Butler buildings

Want to see something really new and different for industrial-commercial construction? Look at the new Butlerib™ panels being installed at the left. Notice their unique pattern. Major corrugations one and a half inches deep make Butlerib panels one of the strongest, most rigid panels of its type. And these deep ribs create dramatic shadow lines, give Butler buildings a new distinctive look.

Butlerib panels are the new standard cover for Butler buildings. They make the Butler system of building, already the lowest-cost way to build well, an even faster and better way to build than ever before. Butler pre-engineering saves countless hours of routine engineering time. Butler mass-production eliminates costly custom-fabrication. And, precision roll-formed Butlerib panels fit the Butler structural system to a "T," permit fast, bolt-together assembly that saves weeks and months of costly construction time.

Get full details on the Butler system of building and new Butlerib panels from your nearby Butler Builder. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings." Or write direct.

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CIRCLE 233 READER SERVICE CARD

PLYMOUTH DIESEL

MINE-O-MOTIVE

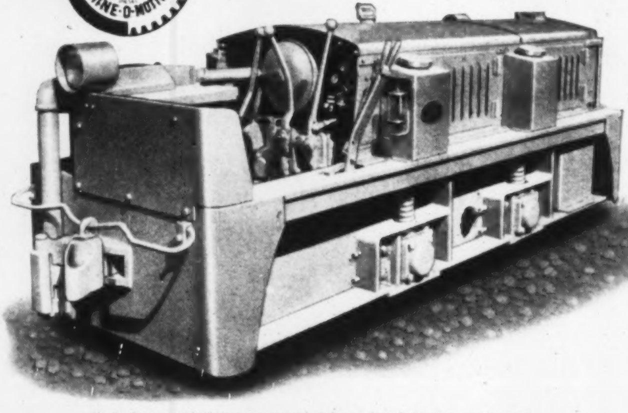
Mine Locomotives 3 to 12 Tons

Engineered expressly for

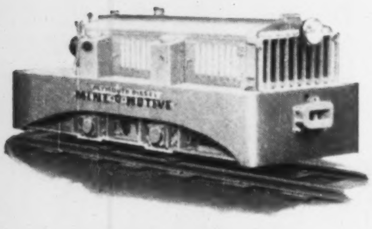
YOUR LOCOMOTIVE HAULAGE

in Today's modern mining operations

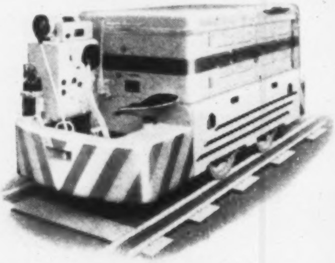
You will find these rugged locomotives performing the toughest hauling jobs in mines and tunnels everywhere. Stamina, stability—ECONOMY in performance, SAFETY in operation—and extra years of trouble-free operation—are ENGINEERED in the design and construction of the Mine-O-Motive series. Controls are convenient, simple, safe. Visibility is excellent. And the Diesel-powered models shown have the famous Torqomotive* Drive for easy starting and smooth operation. They supplement Plymouth gasoline, Diesel and Diesel-electric models which have served all industry since 1914—and with lowest ton-mile costs in the field.



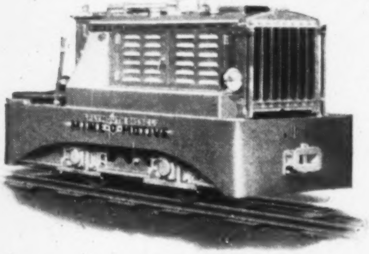
U. S. Bureau of Mines approved exhaust conditioning equipment.



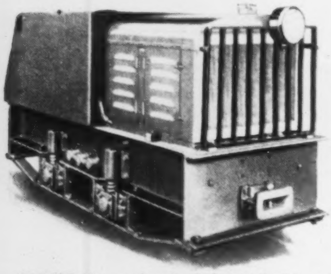
MINE-O-MOTIVE SERIES Model FMD-00 5 or 6 Tons, Torqomotive* Drive—short wheel base, low center of gravity.



MINE-O-MOTIVE SERIES Model FMD-22 5, 6, 7, 8 or 10 Tons, Torqomotive* Drive (this model approved under Permissible Schedule #22, U. S. Bureau of Mines, for operation in gaseous mines).



MINE-O-MOTIVE SERIES Model DMD-00, 8 to 12 Tons, with Torqomotive* Drive — low, compact, one-piece welded frame.



SERIES T, mechanical drive, 3, 3½ or 4 Tons. Torqomotive* Drive in 3½ or 4 Tons.

**TORQOMOTIVE DRIVE: Plymouth Transmission coupled to Hydraulic Torque-Converter.*

FREE ANALYSIS Send us a brief outline of your hauling operations. An engineering analysis will reach you promptly with latest data on the type and size Mine-O-Motive for the best results in the work you want done.

PLYMOUTH LOCOMOTIVE WORKS

Division of the Fate-Root-Heath Company,
Dept. A-4, Plymouth, Ohio

Want More Information on Equipment, Materials?

Use ENR's inquiry card to order the publications you want all at once. The card is on p. 253

Construction Equipment

Batch plant

Operating features and erection steps are described for a two-stop high-speed portable batching plant for highway and airport paving. Four-page Bulletin 2640. Construction Equipment, Blaw-Knox Co. **341**

Batch plant

An eight-page brochure takes apart the automatic batch type bituminous plant and describes each feature in detail. A six-page sales engineering data form supplies specifications in depth on the Model 5-B Auto-batch plant with a 4,000 to 5,000-lb capacity. Pioneer Engineering. **342**

Hot mix plant

Illustrated description of the No. 40 portable batch-type hot mix asphalt plant with 40-to 50-ton-per-hour capacity and two-man operation. Two pages. Culter Engineering Co. **343**

Aggregate dryers

The DA-60 aggregate dryer with 7-ft-dia drum and the DA-70 with 9-ft-dia drum are described in detail. The portable units are for use in the asphalt mixing field. Eight pages. Barber-Greene Co. **344**

Crawler crane

A description of a crawler crane with a 125-ton rated capacity that can be placed on a standard railroad flat car for rapid moves. Manitowoc Engineering Corp. **345**

Truck crane

Twelve-page bulletin describes new 30-ton truck crane, including power brakes, turntable mounting, simplified crane controls. Thew Shovel Co. **346**

Dragline operation

Four pages of photos, drawings and text show how to extend dragline range and handle some difficult jobs. Sauerman Bros., Inc. **347**

Shovel cranes

A twenty-four-page catalog describes the American "500 Series" excavators-crane. Photographs show applications of the rig and its many attachments and also details of various assemblies and units that make up the machine. American Hoist and Derrick Co. **348**

Crane-excavator

The crawler-mounted Model C-350 crane-excavator is described and illustrated. Applications of eight-ton lifting capacity machine are noted. 12 pages. Schield Bantam Co. **349**

Hoist specifications

Eight-page folder gives recommended minimum specifications for electric wire rope hoist construction. The first of a series, it will be followed by other specification standards on hand chain, rachet lever and electric chain hoists. Hoist Manufacturers Association, Inc. **350**

Electric hoists

Selection guide for heavy-duty electric hoists, from ¼-ton to 12-ton capacity. 34-page catalog includes tables of capacity, speed, lift height, current supply and hoist suspension requirements. American Engineering Co. **351**

Aerial lifts

Hydraulically operated telescoping-beam units equipped with a basket designed to carry workers to heights varying, by model, from 28 to 100 ft. Six-page folder. Truck Equipment Co. **352**

Rachet hoist

Specifications and features of five models in the MA series coffing sealed ratchet lever hoist. Capacities range from ¾ to 6 tons. Four-page Bulletin ADH-78. Coffing Hoist Div., Duff-Norton Co. **353**

Electric hoists

Bulletin H-55 deals with description and specifications of Hevi-Lift hoists. Cutaways and illustrations of the electric machines included. Six pages. Harnischfeger Corp. **354**

Rubber mounted crane

On-the-job and assembly photographs illustrate the 205 rubber mounted truck and cruiser crane. Chassis and upper machinery assemblies are dealt with separately. Another section is devoted to boom descriptions. Extensions, power load lowering, third drum and independent lighting plant are included in an optional equipment section. 12 pages. Koehring Div., Koehring Co. **355**

Cranes

Jib cranes of three-to 15-ton capacity which can be pillar mounted, base mounted or self supporting, are pictured in a four-page booklet. R. G. LeTourneau, Inc. **356**

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Scrapers and wagons

An eight-page booklet entitled "Make the Right Turn" explains the use of scrapers and wagons with the Caterpillar DW20 wheel-type tractor. Caterpillar Tractor Co. **357**

Earthmovers

The features of the 19 and 27 ton capacity "Payhauler" trucks are depicted. Two-color, 4-pages. International Harvester Co. **358**

Tractor

The twin-engine Euclid TC-12 crawler tractor is described in detail in a four-color, 24-page catalog. Drawings and photographs show on-the-job application, cut away and section views of major components. Specifications and performance data is also included. Euclid Division, General Motors Corp. **359**

Tractor

The 40-hp 204 industrial tractor is illustrated and described. Engineering features and specifications included. Four pages. Massey-Ferguson Industrial Div. **360**

Crawler tractor

A cutaway drawing and explanation of parts is featured in a description of the HD-16 crawler tractor. Matched equipment for the machine is also pictured and described. 14-page Catalog MS-1318. Allis-Chalmers Mfg. Co. **361**

Tractor shovels

Specification sheets for Trojan models 104, 124, and 154 tractor shovels. Includes list of standard and optional equipment and gives bucket sizes recommended for each unit. The Yale & Towne Manufacturing Co. **362**

Tractor shovels

Special features of Traxcavators, including the new series F 933 are covered in an eight-page booklet. Caterpillar Tractor Co. **363**

Three-way dump bucket

The uses, advantages, and specifications of the Libu three way dump bucket attachment for Traxcavators are included in a four-page pamphlet. Libu Shovel Co. **364**

Tracks

A line of forged crawler tracks for machinery is illustrated in action. Diagrams and specifications. 12 pages. Athey Products Corp. **365**

Tandem trucks

Standard specifications and optional units for a line of gasoline- and diesel-powered tandem trucks. Four-page bulletins. White Motor Co. **366**

(*Publications continued p. 236*)

LABYRINTH® WATERSTOPS

A SOUND INVESTMENT FOR CONCRETE CONSTRUCTION!

LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

ON YOUR CONSTRUCTION:

1. Consider the investment in design, materials and labor (to mention a few).

2. Then consider how important safe, secure *watertight* concrete joints are.

3. Thorough watertightness *can* be secured by installing Labyrinth Waterstops—a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!

- Corrugated ribs grip concrete, insure an everlasting bond between joints.
- Finest polyvinyl plastic resists chemical action, aging, severe weather.
- Takes just seconds to nail to form . . . easy to cut and splice on location (prefabricated fittings available).
- There's a Water Seal product for every type of concrete work!

If your aim is to stop water seepage, *stop it effectively with Water Seals' Waterstops!*

"See Us in SWEET'S"

New Literature and Free Samples Sent on Request—Use Coupon Below

WATER SEALS, *inc.*

9 SOUTH CLINTON STREET, CHICAGO 6, ILL.

Made in Canada for J. E. Goodman Sales, Ltd.
Toronto, Ontario

WATER SEALS, INC. DEPT. 4
9 S. Clinton Street
Chicago 6, Illinois
Please send free sample and descriptive literature.

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Company__________
Address__________
City______ Zone____ State______

Transit mixers

A fact portfolio of features specifications and action photographs of a line of concrete transit mixers. Includes separate sheet describing a portable batching plant. Hercules Galion Products, Inc. **367**

Truck transmission system

A semi-automatic transmission system that eliminates the clutch pedal in heavy-duty trucks. Four-page bulletin No. 311. Dana Corp. **368**

Air brake equipment

Complete line of systems and parts of air brake equipment for trucks, tractors, off-the-road equipment and other facilities. 28-page catalog KU201C. Wagner Electric Corp. **369**

Dump trailer

Line of dump trailers pictured in this folder includes single axle frameless, standard rear, low mount, heavy duty tandem and bottom dump models. Fontaine Truck Equipment Co., Inc. **370**

Dump bodies, trailers and hoists

A 58-page catalog offers descriptions, specifications and photographs of a line of single and tandem axle, light, medium, and heavy-duty contractor-type dump bodies, dump trailer units and hydrauilc hoists. Hercules Steel Products Co. **371**

Earthmovers

Side and bottom dump trailers and truck bodies of 14- to 40-ton capacity are pictured and explained in an eight-page booklet. Easton Car & Construction Co. **372**

Dump trailers

A 12-page booklet, "Profitable Payloads" shows how light, medium and heavy duty dump trailers are tailored to meet specific hauling applications. Trailers pictured run from 16 to 30 ft in length and 10- to 25-ton capacity. Hercules Steel Products Co. **373**

Dump trailer bodies

"Lets Talk Trailers" provides information on dump trailers bodies and hoists for choosing equipment for specific jobs. A number of equipment options are described and detailed specifications for units are included. Light, medium and heavy-duty bodies and hoists are presented along with a selection of chassis designs, suspensions, understructures and hydraulic mounting kits. 12 pages. Galion Allsteel Body Co. **374**

Dumps

Steel and aluminum dump bodies and trailers and hydraulic hoists are illustrated and described with specifications. Body accessories are included for the extensive line. 40 pages. Galion Allsteel Body Co. **375**

Dump trailer

Features and description of a line of dump trailers, both steel and aluminum. Four pages. Trailco Mfg. & Sales Co. **376**

Cement trailer

Specification sheet on the "Airslide" pneumatic pressure tank-trailer describes features of a 720-1, 190-cu-ft cement carrier with pneumatic discharge system. Fruehauf Trailers. **377**

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Railroad tampers

Details and specifications on the complete line of McWilliams Tampers for railroad track work. Eight pages. Railway Maintenance Corp. **378**

Compaction equipment

The Ferguson line of compaction machinery is shown. Folder includes pictures of 20 rollers of all types including vibratory, steel wheeled, self-propelled and towed pneumatic and sheepsfoot. Shovel Supply Co. **379**

Mounted roller

Description and specifications for a 42-in.-wide roller for roadwork. The tilting GraderrolleR is made as an attachment for motor graders. Martin Co. **380**

Earth loader

The Pitloader—with 36, 42 or 60 in. conveyer belt—is illustrated and its features described. Four pages. Koehring Co. of California, Koehring Co. **381**

Universal loaders

Four universal loaders with lift height ranging from 15 ft to 30 ft and maximum lift capacities of from 800 lb to 8,500 lb. Specifications and suggested applications are included. Lull Engineering Co. **382**

Materials handler

An equipment selector chart is included in a catalog of a line of materials handling equipment. Specifications and illustrations on fork lift trucks, tractors and manual equipment are provided. 16-page Catalog 80-204. Lewis-Shepard Products, Inc. **383**

Lift trucks

BU-600 is a four-pager giving data on the recently introduced FTB 30-24, 3,000-lb-capacity lift truck. The BU-497 is an eight-page catalog describing accessories and optional equipment for lift trucks. Allis-Chalmers Mfg. Co **384**

Concrete placers

Specifications, accessory list, and uses of Airplaco Concrete Placers are covered in a four-page pamphlet. Air Placement Co. **385**

Concrete grinder

Pamphlet describes new Model JT 50A, a low-cost portable electric concrete grinder. Also included is a pamphlet titled "How to Grind Concrete". Stow Manufacturing Co. **386**

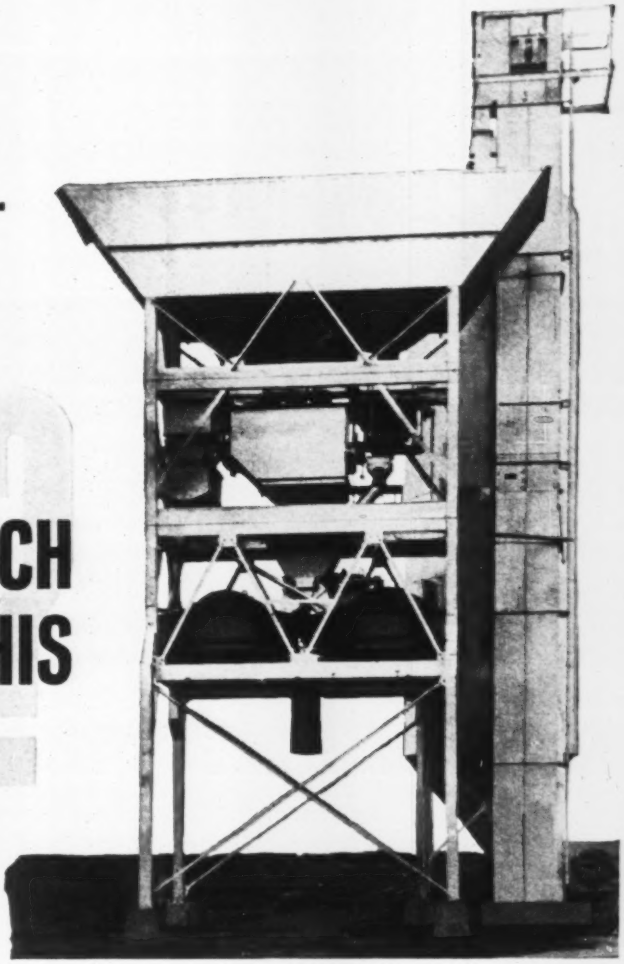
Concrete saw

Features and engineering description of the two-head longitudinal concrete saw for joint making are presented in a one-sheet publication. Clipper Mfg. Co. **387**

(*Publications continued p. 240*)

CAN YOUR PLANT BIG AS IT MAY BE

PRODUCE AS MUCH CONCRETE AS THIS



This BUTLER Central Mixing Plant is simply the extremely portable HP-85 Ready Mixed unit with an additional section to accommodate two turbine-type, high speed concrete mixers.

Production? In excess of 200 yards an hour!

The batching cycles are completely automatic; only one man operates batchers and mixers.

Where such capacities are not required, the BUTLER HP-85 can readily be built for a single turbine mixer.

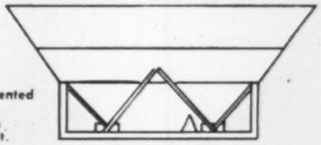
The HP-85 is ideal for fast, efficient, low-cost batching in commercial ready mixed operations as a permanent plant — or as a unit that can be moved quickly and economically from job site to job site. The cost of erecting is only about a thousand dollars.

And of course, the HP-85 brings all its benefits to pre-cast and pre-stressed concrete operations.

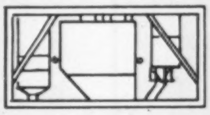
Due to the BUTLER HP-85's remarkable portability, a growing number of ready mixed operators are using it to enter the Highway Program — using either agitating or non-agitating trucks.

What are *your* plans? In any case, plan for the profit-making BUTLER HP-85.

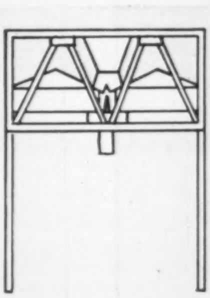
Here's the reason the HP-85 is erected at lowest cost . . . in hours instead of days



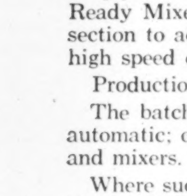
• The compartmented bin section ships complete with lugs attached for crane lift.



• Batcher section is a complete unit with all piping, wiring, batchers and automatic controls in-place, ready for plug-in.



• Mixer section is also a complete unit with two turbine mixers, gates and controls pre-installed. Circuitry is completed with plug-in quick connectors. Support columns ship separately. These are quickly pinned to the mixer platform and swing into place as the mixer section is raised.



You'll want to know more about the BUTLER HP-85. Send for this illustrated Bulletin. Just write "HP-85" with your name and address on a postcard. We'll do the rest — promptly!

BUTLER BIN COMPANY

947 BLACKSTONE AVE. • WAUKESHA, WIS.

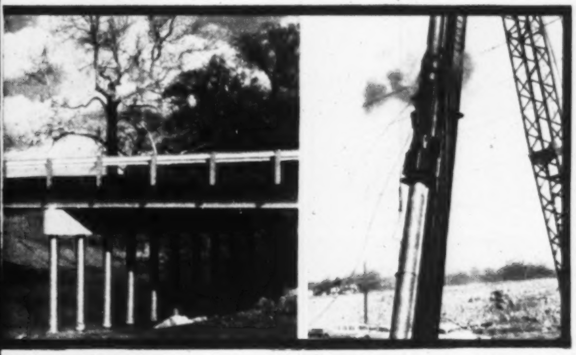
You can check

Use Armco Pipe Piling . . .
it where it counts most
IN THE GROUND

When you specify and use Armco Steel Pipe Piling, you'll find advantages that no other type of foundation product can deliver. *After it's in the ground,* you can make a quick, sure check for alignment and watertightness. A light or reflector lets you see all the way to the bottom. You *know* where each pile goes—no doubt about it.

You can get Armco Steel Pipe Piling in 132 different diameter-wall thickness combinations. Lengths are practically unlimited. Thus, it is an easy matter to specify Armco Pipe Piling to match your *exact* job requirements. Get details. Send coupon for 16-page catalog on Armco Foundation Products.
Armco Drainage & Metal Products, Inc.,
7799 Curtis Street, Middletown, Ohio.

New steels are born at Armco



ARMCO DRAINAGE & METAL PRODUCTS, INC.
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Send your catalog on Armco Foundation Products

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Company__________
Street__________
City__________ Zone_____ State_____

ARMCO DRAINAGE & METAL PRODUCTS

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Subsidiary of ARMCO STEEL CORPORATION

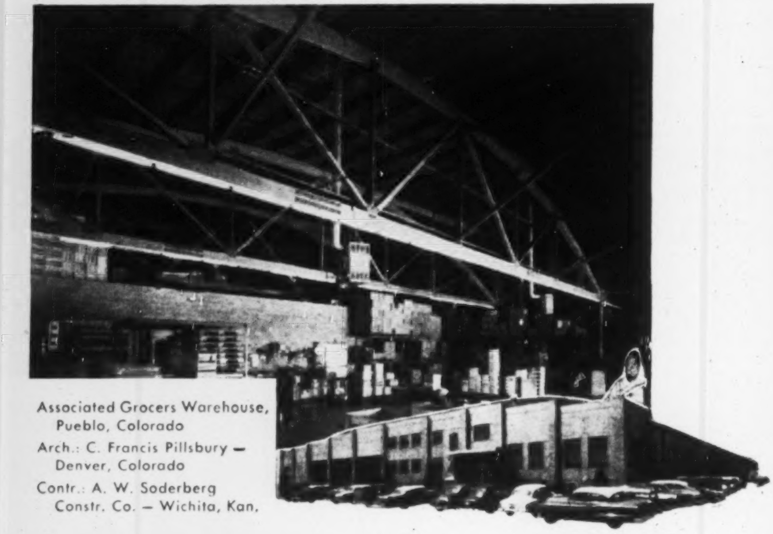
OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

CIRCLE 239 READER SERVICE CARD

"BEAMS FABRICATED WITH EXTREME ACCURACY FIT INTO BUILDING VERY ECONOMICALLY"

says Contractor A. A. Martinez

Blake, Moffitt & Towne Bldg., Portland, Ore.
Arch.: D. L. McConnell — Portland, Ore.
Contr.: Wagner & Martinez — San Francisco, Cal.



Associated Grocers Warehouse, Pueblo, Colorado
Arch.: C. Francis Pillsbury — Denver, Colorado
Contr.: A. W. Soderberg Constr. Co. — Wichita, Kan.

"The glued beams were fully up to specifications, were prefabricated with extreme accuracy—*Our past experience has been different with other manufacturers,*" says Contractor Martinez.

Each RILCO beam is carefully fabricated for *your* job—each connection fits. Nothing is left to guesswork. The beams arrive at the jobsite completely wrapped with holes drilled for connecting hardware furnished. Erection is fast and simple, even with inexperienced labor. This savings in time, plus low initial cost means a big savings in money.

The proof is in the using—Architect C. Francis Pillsbury says "I have used a great many RILCO trusses since this installation, Associated Grocers Warehouse, like them, and will use many more."

Besides fast erection and low cost, RILCO laminated wood members add utility, fire safety and outstanding beauty to school, church, factory or commercial buildings. Learn how RILCO can help you complete jobs on time, at a profit. Write your nearest RILCO office.

RILCO LAMINATED PRODUCTS, INC.
W801 First National Bank Building
Saint Paul 1, Minnesota

District offices:
Newark, New Jersey; Fort Wayne, Indiana; Tacoma, Washington

RILCO
works wonders with wood

For More Information . . .
. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Pavement breaker

Specifications and engineering drawings for the 125 air-operated pavement breaker. Four pages. Thor Power Tool Co. **388**

Trencher

Design and construction features and how they improve operation are described for the J-20, J-30 and J-40 trenchers. Digging capacities, specifications and dimensions are included. Four-page Bulletin L-104. Cleveland Trencher Co. **389**

Utility digger

Specifications, engineering features and field applications of a four-wheel-drive earth-boring and pole-setting tractor. 50-page catalog. FWD Corp. **390**

Helicopter

Surveying, equipment and repair supply, and transport of supervisory personnel by helicopter are among topics covered. Brief performance specifications and information on charter operator services are also presented. Commercial Division, Hiller Aircraft Corp. **391**

Diesel engines

Photographs, line and bar graphs, cutaway drawings and specification data tell the story of the Cerlist Diesel Model 3 in an eight-page, four-color booklet. Cerlist Diesel, Inc. **392**

Engines

Twenty-four engine models are listed in a power chart for easy selection. Horsepower ratings range from 16.5 to 385. Four pages. International Harvester Co. **393**

Pile hammers

Pictures, specifications, performance data and parts lists for the Model DGH-900, a lightweight differential sheeting hammer with an energy of 4,000 ft-lb are included in an eight-page, two-color bulletin. Vulcan Iron Works, Inc. **394**

Roadway machines

A set of two-page specification sheets deals with various road base and paving machines—utility bridges, subgrade testers, subgrade planers, concrete finisher, spray curing equipment bridge deck finisher and finisher-float machine. Flexible Road Joint Machine Co. **395**

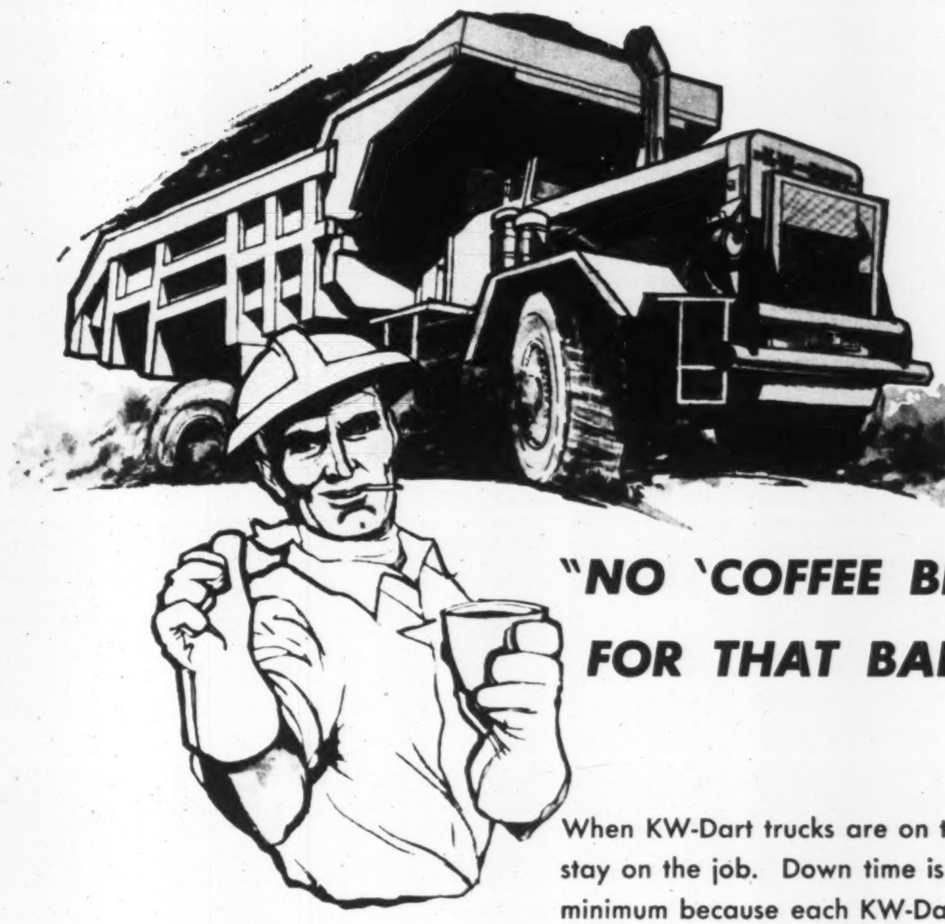
Belt conveyors

40-page booklet describes sectional, prefabricated belt conveyor assemblies and the many types of conveyor machinery available. Link-Belt Co. Dept. PR. **396**

Mobile lubricating rigs

Layout, equipment requirements, specifications and assembly suggestions with drawings and exploded views of truck-mounted lubricating equipment. Completely indexed, 32 pages. Lincoln Engineering Co. **397**

(*Publications continued p. 242*)



"NO 'COFFEE BREAKS' FOR THAT BABY . . . ."

When KW-Dart trucks are on the job, they stay on the job. Down time is reduced to a minimum because each KW-Dart and each component is engineered for its specific job requirement.

KW-Dart has been building "tonnage-engineered" trucks since 1903. Performance figures, proving their rugged durability, are available for your study.

To reduce your maintenance costs and keep your trucks on the job, call for a KW-Dart engineer to consult with you.

This 25 ton KW-DART, Model 25SL, is the work horse of the KW-DART line. In use internationally in a wide variety of applications, it is known for high performance, low upkeep and economical operation.

Heavy duty off-highway and underground trucks—10 ton to 70 ton payloads.

KW-DART TRUCK CO.

Subsidiary of Pacific Car and Foundry Company

1301 North Manchester Trafficway **P. O. Box 321**
Kansas City 41, Missouri, U. S. A. 149

BEN H. PETTY

Engineer, ret., Lafayette, Indiana

A LIFETIME OF SATISFACTORY ROAD SERVICE

On August 28, 1957, the Honorable Francis Case, U. S. Senator from South Dakota, entered in the Congressional Record-Appendix a letter to him dated July 15, 1957, from C. D. Curtiss, Commissioner of Public Roads, responding to an inquiry from the Senator.

Mr. Curtiss' letter states, ". . . Excellent surfaces may be constructed of either bituminous concrete [Asphalt] or portland cement concrete, and there is considerable value in having the two types actively in competition." With this statement we agree. Mr. Curtiss also stated: "In general, it may be said that under comparable service conditions, and with comparable designs, the annual costs of the two types are reasonably close." This statement we could debate, but we will pass over it for now.

However, we wish to emphasize a very pertinent factor, frequently overlooked in such comparisons. This is the capability of a modern Asphalt pavement to present, *continuously*, a smooth, satisfactory riding surface that can be maintained throughout its economic life with long interval, inexpensive seal coats or surface treatments. And the economic life of an Asphalt pavement under such operations may be extended indefinitely!

In contrast, rigid type pavements, which have met smoothness requirements when constructed, tend to become *increasingly rough riding* as they grow older.

This results from cracking, caused by temperature changes and differentials, joint failures, base and subgrade settlements, frost action, and subsequent increase in load impact.

Joints and cracks can be filled, and spalled areas patched with bituminous materials, but the generally rough surface still exists. An expensive, complete resurfacing eventually is necessary. In the meantime—*increasingly rough riding!*

Ben H. Petty

Presented as a Public Service by

THE ASPHALT INSTITUTE

Cleaner

The Model 250 pressure combination cleaner for removing mud, dirt, grease and road tars from machinery is described. Eight pages. Malsbary Mfg. Co. **398**

Kettles

Engineering and design features listed for bottom-fired melting kettles. Two pages. Aeroil Products Co., Inc. **399**

Silencers

A four-page bulletin on silencers lists types, models and sizes available and identifies other bulletins that contain fuller information on particular silencers. Maxim Div., Emhart Mfg. Co. **400**

Safety lights

Descriptions and illustrations of a unidirectional 7-in. lens light a two-way 4-in. light, and a two-way 7-in. light, all with flashing rates of 100 per minute. Three 2-page bulletins. R. D. Fageol Co. **401**

Shoring equipment

Six-page folder details frames and accessories of shoring panels, braces and individual steel shores. Waco Manufacturing Co. **402**

Tunnel liner plates

Tunneling practices with Armco liner plates are covered in 20-page booklet. Applications, engineering data, tables, graphs, typical installations. Armco Drainage & Metal Products, Inc. **403**

Sweeper

Self-propelled power broom is described in detail from 8-ft-long broom to shipping weight. Two pages. Flaherty Mfg., Inc. **404**

Wire rope blocks and sheaves

Complete specifications and recommended wire rope sizes for Durolite Blocks and sheaves are listed in a 12-page catalog. Information covers size range running from one-ton single blocks to 600-ton multiple sheave assemblies. Sauerman Bros., Inc. **405**

Gearmotors

Technical information on horizontal and vertical mounted gearmotors with capacity up to 125 hp and output speeds ranging from 1.2 rpm to 780 rpm. Load characteristics and selection tables are included. Hewitt-Robins, Inc. **406**

Soil profile instrument

Application data and descriptive literature cover the Model 274-M portable instrument for plotting locations, depth and types of soil layers by the Barnes Layer Method using earth conductance. Associated Research, Inc. **407**

Land clearing

The features and applications of Fleco land-clearing attachments for Caterpillar equipment are covered in a four-page brochure. Fleco Corp. **408**

Tensioning equipment

A tensioner and a puller capable of pulling and tensioning four conductors simultaneously. Specifications, photographs and engineering features are included. Four-page leaflet. Truck Equipment Co. **409**

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Construction trailers

A line of trailers including dumps, tanks, platforms, poles, carryalls and cementers is described and illustrated in detail. Suspensions, vertical supports and brakes treated fully. 52 pages. Fruehauf Trailer Co. **410**

Steel forms

Design and manufacturing features of all-welded steel forms, selection data, and information on form accessories are carried in four-page bulletin No. 59165. Chain Belt Co. **411**

Steel scaffolding

Four-page folder illustrates speed and simplicity of tubular steel scaffolding, panels and accessories. Includes information on slip joints and selflocking connections plus full parts list and plastic model. Vega Industries, Inc. **412**

Beam form hangers

A six-page report on hanging beam bottoms with steel strapping for concrete fireproofing of structural steel frames. Acme Steel Co. **413**

Piling

A table for estimating the number of steel sheet piles needed for walls of any given length up to 2,000 ft, also includes drawings and specifications of most commonly used steel sheet piling sections. Mississippi Valley Equipment Co. **414**

Building Materials

Piling

Applications of corrugated pile shells, steel pipe piles and steel caissons are discussed. The four-page booklet includes condensed specifications. Armco Drainage & Metal Products, Inc. **415**

School lighting

Booklet describes in 24 pages requirements for classroom and non-classroom areas, covering both natural and artificial light. Performance data on various types of fixtures. Smoot-Holman Co. **416**

Low temperature insulation

A 12-page illustrated brochure on Styrofoam pipe and vessel covering applications for low temperature installation. Engineering data, application techniques and charts on thicknesses and heat gain are presented. Dow Chemical Co. **417**

Steel and aluminum windows

20-page catalog provides specifications and describes full line of aluminum windows for commercial and industrial applications; a companion booklet, 35 pages, covers steel window units. The William Bayley Co. **418**

(*Publications continued p. 244*)

Presenting the NEW LE ROI 75 ROTARY

with fingertip starting — automatic speed-pressure control—easy one-man handling—and modern chassis with flip-top hood!

STARTS FAST with push-button ease. Conveniently grouped controls simplify operation.

(Right) **TRIM BUT ROOMY** enclosure protects engine and compressor unit—provides ample space for carrying and safeguarding tools.

The new Le Roi 75 Rotary is as close as you can get to carefree on-the-job air power. It's slimmed down to its working best — to give a profitable account of itself on small heavy-duty jobs that call for 75 cfm of air at 100 psi.

This bantam rotary is trim, light, and compact for easy handling and for efficient, low-cost operation. You can tow it anywhere with truck or auto. And it's so perfectly balanced that one man can move it around the site quickly and easily — tools and all!

Spring the modern aluminum flip-top hood if you want to see the latest in space- and parts-saving design! The single-stage rotary is direct-coupled to a 4-cylinder, water-cooled engine. You get such top-performance and long-life features as automatic speed-pressure regulation and oil-temperature control — 12-volt electric starting — separate engine and compressor cooling systems — generous ventilation — and better, easier access to all parts than ever before possible on *any* portable air compressor!

Why waste larger units and extra men on small jobs — when you can do the job better, faster, and at lower cost with the new Le Roi 75 Rotary? See it — get it today from your nearby Le Roi distributor. Or write Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

here's dependable air power with a flip-top hood.

FLIP-TOP HOOD opens all the way for fast, unobstructed adjustments or servicing.

LE ROI
ROTARY
COMPRESSORS

PORTABLE AND TRACTAIR® AIR COMPRESSORS
STATIONARY AIR COMPRESSORS
AIR TOOLS

PC-904

safest !

If the new Remington Captive Stud Tool is accidently fired into inadequate base material . . .

Captive Stud Guard Assembly prevents free flight of stud, which is locked to tool during firing.

New exclusive guard assembly makes the

Remington Stud Driver

safest powder-actuated tool ever designed

Fast, efficient and now the safest! The Remington Stud Driver with Captive Stud Guard Assembly anchors fastening studs permanently in concrete or steel. But if base material is inadequate, the stud stops short—no danger of free flight!

When you use the Remington Stud Driver with Captive Stud Guard Assembly, you have the convenience of a tool that's powder-actuated . . . no outside connections needed, no pre-drilling required. Just squeeze the trigger and the stud is set!

Choose from a *complete* selection of studs and Power Loads for all 1/4" and many 3/8" fastening applications. You'll save time and money on every job!

Send coupon below for full information about Remington Tools.

CHOOSE THE POWER MOST
EFFICIENT FOR YOU. REMINGTON
POWER TOOLS ARE AVAILABLE IN
**AIR • ELECTRIC • GASOLINE
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Please send, without obligation, catalogs on Remington Contractor & Industrial Tools checked below:

☐ Stud Drivers ☐ Air Tools ☐ Chain Saws ☐ Concrete Vibrators ☐ Electric Tools ☐ Flexible Shaft Machines

*Name*__________ *Position*__________
*Company*__________
*Address*__________
*City*__________ *Zone*_____ *State*_____

CIRCLE 244 READER SERVICE CARD

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Architectural porcelain

Product folder includes specifications and descriptions of curtain wall and facing panels with color standards. Davidson Enamel Products, Inc. **419**

Steel screens and windows

Construction and installation information for complete line of architectural and industrial steel windows and screens—48 pages. Ceco Steel Products Corp. **420**

Open web framing

Design information for Macomber open web floor and roof framing members is given complete with detailed tables of dimensions and properties. 28-page manual MA-59. Macomber. **421**

Structural sandwich building panels

Booklet illustrates a wide variety of modular panels and finishes available for Panelfab houses and buildings. It describes panel construction, types, uses and erection. Panelfab Products, Inc. **422**

Galvanized steel sheet

This 36-page booklet contains cost information, specifications, instructions on care and maintenance of galvanized sheet and full list of manufacturers of metallic zinc paints. American Zinc Institute, Inc. **423**

Steel decking

Full specifications plus information on heating system hookup shown in a 28-page booklet on the "Q-Air Floor" system of the H. H. Robertson Co. **424**

Industrial gratings

Two folders describe crimp-locked aluminum gratings and welded steel gratings for stairs and elevated working floors. Tables include data on weight, sizes and loading. Rockwell Standard Corp. **425**

Ceramic wall tile

American Standard Association specifications for glazed ceramic wall tile, ceramic mosaic tile, quarry tile and pavers installed in portland cement mortars. 28 page booklet. Tile Council of America. **426**

Guard rails

Uses and descriptions of guard rails for business and industry. 12-page brochure. Whitmyer Bros., Inc. **427**

Resilient flooring specifications

Twenty-page perforated-tearout booklet covers major types of resilient flooring from material specification to installation and maintenance. Pages suitable for direct transcription to specification makeup books. Armstrong Cork Co. **428**

Heat transfer cements

Properties and uses of Thermon heat transfer cements together with estimating and installation data are described in 10-page booklet. Thermon Mfg. Co. **429**

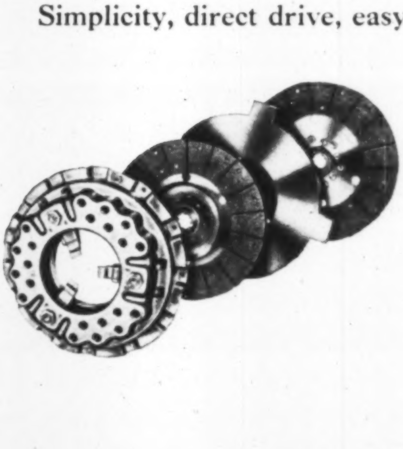
(Publications continued p. 248)

In Heavy Construction Equipment, too,
the Trend is to LIPE CLUTCHES

CLARK
CLARK
TRUCKING CO.
28
23

Cost-conscious construction men count profits in terms of *actual* operating costs. Replacement clutches are measured not only by initial price, but also by the frequency and cost of repair and maintenance. All these factors add up to the growing trend among heavy equipment contractors to specify LIPE replacement clutches in dumps, cranes, shovels, earthmovers and other heavy duty rolling stock.

Simplicity, direct drive, easy adjustment and replacement-exchange make the Lipe DPB the choice of construction men for truck GVW applications of 19,000 pounds and up. Built with fade-resisting chrome-silicon springs, and designed to shrug off shocks and dissipate friction-generated heat, the DPB stays in service longer, with lower costs for fuel, oil, brake relining and repair of all components in the power train. See your Lipe distributor soon. He'll show you why . . . *the trend is to* LIPE!



Lipe Heavy-Duty DPB Clutches are available in single and two-plate types; 12", 13", 14" and 15" sizes; with torque capacities from 300 to 1900 ft.-lbs.

Lipe-ROLLWAY
CORPORATION
SYRACUSE 1, N. Y.

Form BETTER round FASTER

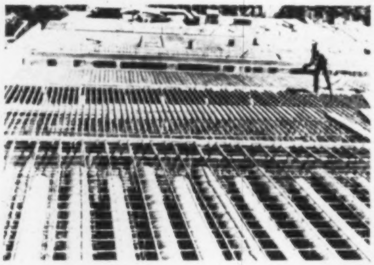
FORM VOIDS IN CONCRETE CONSTRUCTION

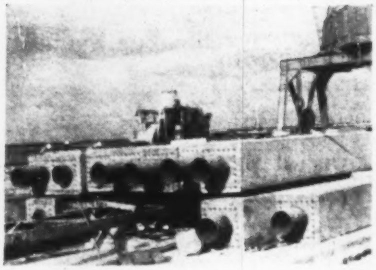
Reduce Weight and Save Materials
in Concrete Slabs and Piles . . .
FORM VOIDS WITH

SONOCO

SONOVOID®

FIBRE TUBES





By displacing low-working concrete at the neutral axis, Sonovoid Fibre Tubes reduce weight in concrete floor and roof slabs, bridge decks, and in precast, prestressed concrete piles. The voided system saves concrete and reinforcing steel while maintaining structural strength and increasing design flexibility.

Order Sonovoid Fibre Tubes in sizes from 2.36" to 36.9" O.D., in specified lengths or standard 18' shipping lengths. Can be sawed at the job . . . end closures available.

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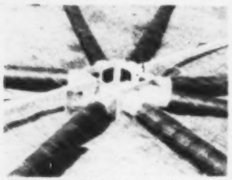

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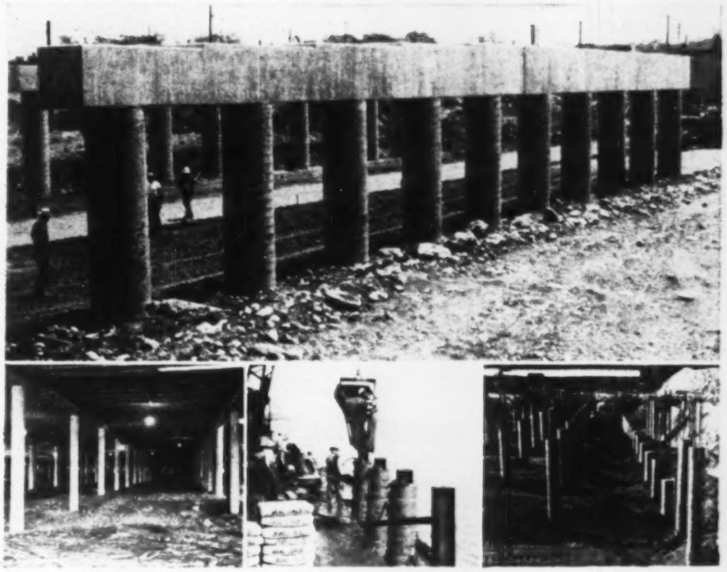

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Elliptical concrete pipe

A four-page brochure, "Elliptical Concrete Pipe for Sewers and Culverts" contains illustrated descriptions of the use of elliptical pipe to obtain round-pipe flow equivalents in areas where either shallow or narrow trenches make use of round pipe impractical. Includes diagrams, data charts and tables. United States Concrete Pipe Co. **430**

Cast iron soil pipe

New Commercial Standard CS-188-59 covers extra heavyweight and serviceweight specifications for cast iron soil pipe and fittings. Cast Iron Soil Pipe Institute. **431**

Asbestos-cement pipe

Dimensions, tolerances and other specifying information needed by the engineer is included in a four-page folder on asbestos-cement gravity sewer pipe. Keasbey & Mattison Co. **432**

Pressure tubing

A four-page bulletin TDC-142B gives condensed data on the mechanical and physical properties of seamless and welded carbon steel pressure tubing. It supplies information on normal fabrication operations. Babcock & Wilcox Co. **433**

Steel tubing

A brochure covering welded carbon and stainless steel tubing. 12 pages. The Formed Steel Tube Institute. **434**

Abrasive wear

What abrasive wear is, economics of wear and how to combat it with molybdenum-containing materials are described in a 36-page report by the Climax Molybdenum Co. **435**

Built-in vacuum cleaning

Eight-page catalog and four-page bulletin illustrate industrial vacuum equipment for schools, offices and factories and flush-floor inlets for cleaning mops and dusting gear. Catalog 160; bulletin 153C. Spencer Turbine Co. **436**

Industrial air filters

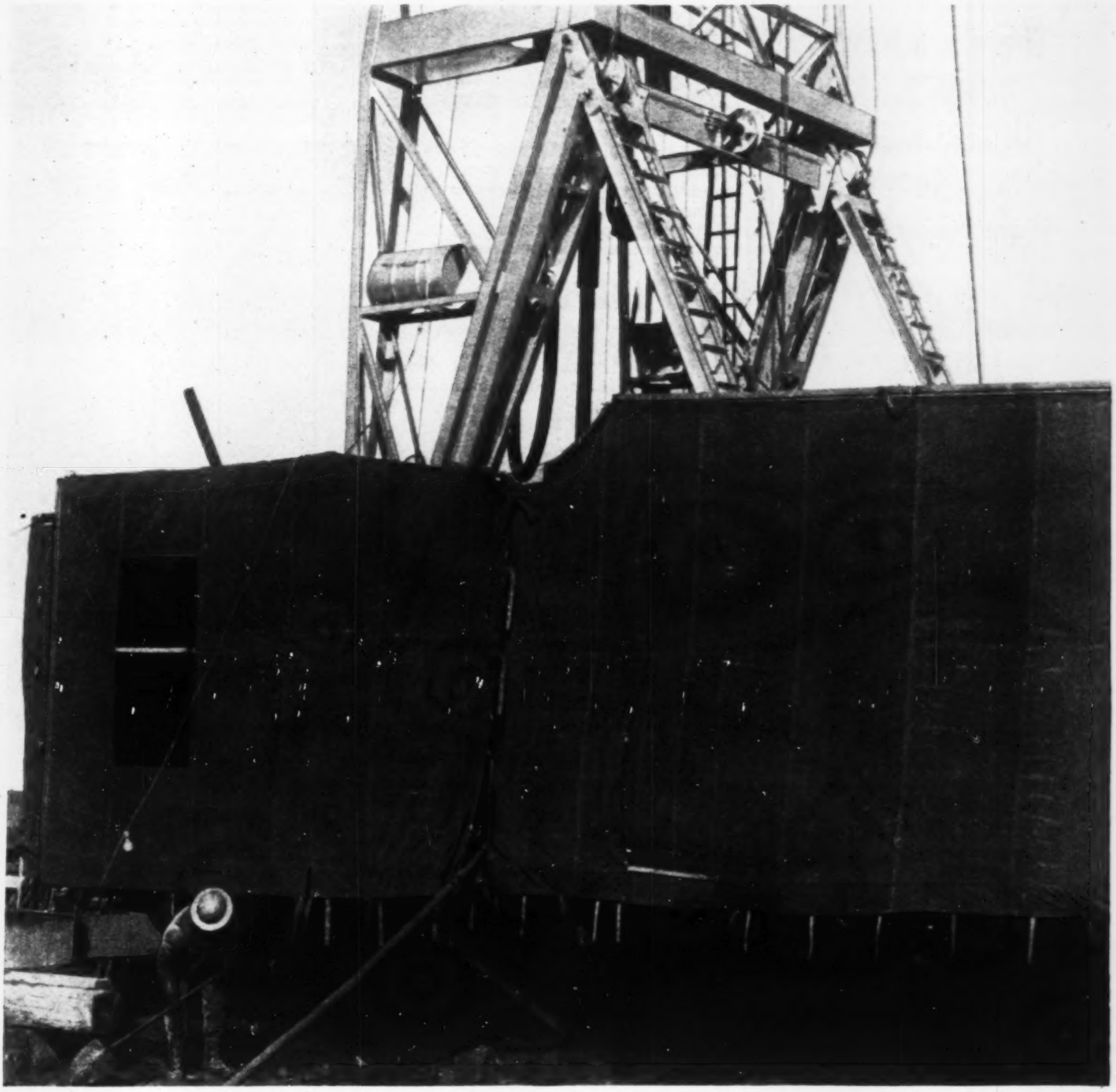
Bulletin covers steel mill application of heavy-duty air filters, complete with recommendations for capacity, type and maintenance in various steps of steel-manufacturing. 16 pages. American Air Filter Co., Inc. **437**

Water-conditioning controls

A 12-page catalog illustrating modern water conditioning and ion exchange system control assemblies. The Permutit Co. **438**

Hydrostatic instruments

An 88-page, "Handbook of Hydrostatic Instrumentation," available for engineers



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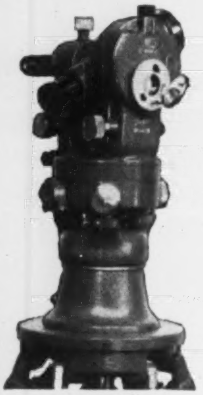

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and others responsible for the specification, purchase, installation or operation of instruments. Principles of hydrostatic measurement, selection and installation of instruments, design and construction of panel systems, and other useful engineering data and diagrams are included. Petrometer Corp. **439**

Overhead cranes

Concise, but detailed, engineering data for the installation of a line of overhead electric traveling cranes is offered in an eight-page pamphlet. Northern Engineering Works. **440**

Filter holder

Leaflet describes a stack sampling filter holder designed to determine dust and aerosol concentration in smoke stacks, process ducts and other closed systems. Gelman Instrument Co. **441**

Sand classifier

A four-page brochure describes the Wemco Sand-Sort, a free settling classifying tank for removing excess slimes and water from a sand slurry and eliminating unwanted size fractions. Wemco, A Div. of Western Machinery Co. **442**

Sand classifying tanks

Design and construction information in a four-page bulletin, including dimensions drawings and fine sand retention data for various tank sizes. Bulletin SCT-59, McLanahan & Stone Corp. **443**

Pumps

Bulletin No. 350 titled "Layne Propeller and Mixed Flow Pumps" includes cut away drawings, installation sketches and measurements, delivery and performance tables and application information. Layne & Bowler, Inc. **444**

Submersible pumps

Folder describes a heavy duty submersible electric pump, Model FLYGT B-80L. Four pages. Stenberg Mfg. Corp. **445**

Vertical check valve

A one-page leaflet describes and illustrates the Reda Model AA low resistance vertical check valve. Reda Pump Co. **446**

Safety shut-off valves

A four-page bulletin, F-47, describes and illustrates No. 10 Safety Shut-Off Valve for hazardous liquid lines. OPW-Jordan. **447**

Open channel metering

Bulletin describes the Chronoflo In-Stream Transmitter Model CTF-S, for installation on Parshall flumes, weirs and other head-area devices. B-I-F Industries, Inc. **448**

Primary flow meters

A four-page bulletin describes an expanded line of insert type flow tubes for

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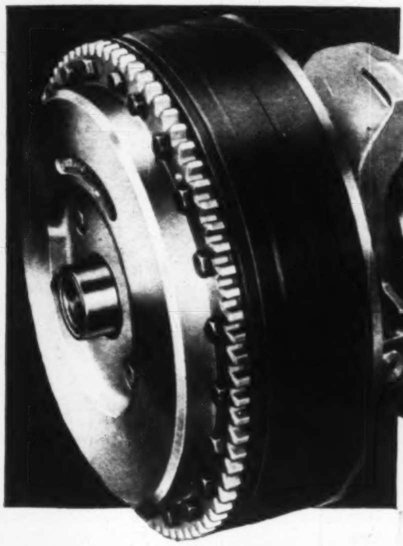

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Trackwork

Specifications for turnouts, frogs, guard rails, switch stands, crossings and other trackwork designed for mines, mills and ordnance depots. Eight-page brochure American Brake Shoe Co. **450**

Treadles

A line of vehicle-detecting treadles. Specifications and illustrations. American Electronic, Inc. **451**

Roller bearings

Features, applications and sizes of a firm's nine principal lines of roller bearings. Special bearings for unusual applications included. 16-page Catalog PL-559. Rollway Bearing Co., Inc. **452**

Ball bearings

Information on types and sizes of a line of deep-groove ball bearings for a variety of applications. Dimensions and engineering drawings. 12-page Bulletin 110. Hoover Ball & Bearing Co. **453**

Variable speed pulleys

A 12-page bulletin gives technical data for five "MS" sheaves designed for 2, 3, 10, and 15 hp. Bulletin 4101, T. B. Wood's Sons Co. **454**

Miscellaneous

Plant construction

A 24-page booklet describes process and mechanical design, procurement and construction stages of complete plant building services. Foster Wheeler Corp. **455**

Pole-type buildings

Permanent buildings at low cost with pole framing described with typical examples and a variety of designs. Koppers Co., Inc. **456**

Steel buildings

A series of four booklets totalling 50 pages describing design criteria, colors available and types of warehouse, retail and school buildings. Stran-Steel Corp. **457**

Blasting

A 60-page "Handbook of Electric Blasting," written for both the beginner and the experienced blaster, explains effective electric blasting. Covers sources of power, construction of electric blasting caps, methods of splicing wires, testing circuits, use of rheostats. Atlas Powder Co. **458**

Case studies on dams

Reports on 25 major dams built in the U. S., Japan, Canada, Alaska and South America are included in a 48-page booklet. Each report features the role played by Pozzolith admixture. The Master Builders Co. **459**

Delaware Valley air photos

A four-page folder describes 1959 air-photo coverage of the Delaware Valley area. It includes a price list for photographs and instructions for ordering photomosaics and topographic maps. Aero Service Corp. **460**

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School film

How-to-do-it motion picture planned as an aid to school administrators, civic groups and architects in getting new schools approved, designed and built. Half-hour, 16mm, in color. U. S. Steel Corp. **461**

Road maintenance

Charts and tables are included in "Maintenance Tips for Unpaved Roads." 36-page booklet. Calcium Chloride Institute. **462**

Asphalt additive

Two booklets deal with the subject of heat-stable additives for asphalt. Tables and graphs included. Eight and 12 pages. Carlisle Chemical Works, Inc. **463**

Steel line pipe

A 40-page booklet describing the manufacturer of steel line pipe is divided into three sections: continuous weld pipe ½-4 in. in diameter; electric resistance weld pipe 4½-18 in. in diameter; and electric weld pipe 20-36 in. in diameter. Each section includes descriptions, pictures and flow diagrams showing manufacturing sequence. Also includes line pipe data tables. Kaiser Steel Corp. **464**

Carbon dioxide welding

Welding mild steel and low alloy steels with carbon dioxide shielding gas-covered in a three-section, 24-page booklet. Sections cover fundamentals, job applications and equipment. Air Reduction Sales Co. **465**

Welding repairs

How to repair and replace metal on broken and ruptured parts with carbon paste, plate and rod described in 16-page pocket-size booklet. Drawings show makeup for a variety of shape-weld repairs. The Arcair Co. **466**

Welding aluminum

A 120-page book describes techniques of gas-shielded metal-arc welding and tungsten-inert-gas welding of aluminum. Covers weldability, alloys, equipment, processes and safety procedures. Air Reduction Co. **467**

Welded pipe

A 12-page booklet describes the production operations in making electrically welded line pipes. A table of specifications is included. Jones & Laughlin Steel Corp. **468**

Safety products

Complete line of B&L safety products for industrial and laboratory job requirements, including specially designed goggles, eye shields and ear protector, are described in catalog. Bausch & Lomb Optical Co. **469**

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Here's the easy way to get copies of manufacturers' publications, editorial reprints and more information about products and services advertised in ENR.

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41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
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281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
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351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470
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474. **Prestressed Concrete Teams With Structural Steel**—a design combining the two in a single 16-story building.

475. **How Chicago Plans to Rebuild Rapid Sand Filters**—the problem of removing, regrading and replacing 16,000 cu yd of sand.

476. **Cost Cutter: Make Pipe Gallery a Driveway**—it saved money in construction and will save during operation.

477. **How Modern Piers Save Money**—economies in the latest designs of piers for the Port of New York Authority.

478. **Needed: 418,000 Classrooms**—a state-by-state rundown of where school construction should be over the next five years.

479. **Precast T-Frames Speed Library Erection**—the designers had speed and economy in mind.

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141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
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221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
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281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
MANUFACTURERS' PUBLICATIONS										341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470
EDITORIAL REPRINTS					471	472	473	474	475	476	477	478	479	480	481	482	483	484	485

NAME ____________________

POSITION ____________________

COMPANY ____________________

BUSINESS ADDRESS ____________________

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Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Conn., Groton**—LIGHTING REPAIRS—BA 9/23—Officer Charge of Constr., Naval Submarine Base, Box 400, New London, electrical services and lighting repairs, State Pier, Proj. NBy 26660. $10,000.

† **Massachusetts and Vermont**—REMEDIAL REPAIRS etc.—BA On Or About 9/29—U. S. Eng., 310 State St., Springfield, Mass., remedial repairs to A/C shelters, Westover Air Force Base, Chicopee Falls, Mass. and Ethan Allen Air Force Base, So. Burlington, Vt. ENG-19-016-60-22. $30,000-$50,000. CD 9/19/57, under Vt., Winooski.

BUILDINGS—BA

Mass., North Andover—DORMITORIES—BA 9/21—Merrimac College, Turnpike Rd., 2 dormitories (boys and girls). $500,000. Clinton F. Goodwin, 25 Washington Square, Haverhill, archt. CD 1/12.

Mass., Cambridge—OFFICE—BA 9/23—Bolt, Beranek & Newman, Inc., 50 Moulton St. (selected list bidders) office addn., Moulton St. Approx. $400,000. Hoover & Hill Assoc., 102 Mount Auburn St., archts. CD 7/14.

Mass., Westford—SCHOOL—BA 9/24—Town, Elementary School Bldg. Comn., elementary school, Nabnasset Section. $400,000. Plans deposit $150. Perley F. Gilbert & Assoc., Inc., Sun Bldg., Lowell, Mass., archt. CD 2/16.

▲ **N. H., Keene**—SCHOOL—BA 9/29—City Keene-Union School Dist., Supt. Schools, Keene, Secondary Schools addns., alterations, $1,000,000. Alonzo J. Harriman, Inc., 292 Court St., Auburn, Me., archt. CD 2/6.

Conn., West Hartford—CHURCH—BA 9/30—Covenant Congregational Church, 77 Hungerford St., Hartford, church and educational bldg. $400,000. Kelton C. Painchaud, Hull Bldg., Madison, archt.

▲ **Mass., Chicopee**—HOTEL—BA 10/1—Schine Enterprises, Inc., 350 Fifth Ave., New York, Zone 1 (selected list bidders) 2 story hotel, 2 wings, swimming pool, near Massachusetts Turnpike. $2,500,000. Lapidus, Kornblath, Horle & Liebman, 256 E. 49th St., New York 17, N. Y., archts. CD 7/6.

Mass., Westboro—POWER PLANT—BA 10/2—Commonwealth of Mass., Youth Service Bd., Div. Bldg. Constr., 38 Chauncy St., Boston, Y58-3, power plant dist., Lyman School for Boys. $136,700. Plans deposit $20. Perez O. Lewin, 200 Chestnut St., Andover, engr. CD 9/10.

BUILDINGS—SLC

Conn., Greenwich—HOTEL—Greenwich Motor Hotel Corp., 250 Old Battery Rd., Bridgeport, soon lets contract motor hotel. $600,000. Kane & Fairchild, 734 Asylum Ave., Hartford, archts. CD 3/18.

HEAVY CONSTRUCTION—LB & CA

† **Dist. P. Wks. Office,** 1st Naval Dist., Bldg. 37, 495 Summer St., Boston, Mass. cancelled bids to have been opened Aug. 20, repairs to mechanical utility distr. sys. Portsmouth Naval Shipyard, NBy 20717. Spec. 20717/58. PORTSMOUTH, N. H. Est. **$100,000-$250,000.** CD 8/5.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Mass.—**Berke-Moore Co., Inc.,** 8 Newbury St., Boston, Mass., CA **$4,598,523,** hy. and bridge Rte. 128. U-272 (36), Lynnfield and Peabody.

Mass.—**White Oak Evcavators Inc.,** 61 E. Main St., Plainville, Conn., CA **$1,206,599,** hy. and bridge relocation Rte. 7, Sheffield. Bids Aug. 11, awarded Sept. 1. CD 8/13, under LB.

A. Singarella & Sons Inc., 5 West Howell St., Dorchester, Mass., CA **$97,321,** est. $100,000, access road, etc. Fire Department Training School, Moon Island, Quincy, BOSTON, MASS. City, Fire Dpt., 115 Southampton St., Boston, Mass. Bids Sept. 1. CD 8/20.

Chelsea Engineering & Constr. Co., 85 Garfield Ave., Chelsea, Mass., CA **$197,261,** est. $200,000, imprv. Winthrop Rd., Crescent Ave. and Crow St., CHELSEA, MASS. City, City Hall, Chelsea, Mass.

Maskel Constr. Co., Inc., Rte. 5, South Windsor, Conn., LB **$212,405,** est. $250,000, interceptor sanitary sewers North Branch Tributary Area, SPRINGFIELD, MASS. Dpt. Streets & Engineering, Admin. Bldg., Springfield, Mass. Bids Sept. 1. CD 8/12.

Rufo Constr. Co., 89 Adams St., Newton, Mass., LB **$106,645,** est. $100,000, b. conc. pavement Bogandale Rd., etc. West Roxbury, BOSTON, MASS. City, Dpt. P. Wks., City Hall Annex, Boston, Mass. Bids Sept. 3. CD 8/27.

Bd. Selectmen, Town Hall, Sunderland, Mass., rejected bids Aug. 31, sewage treatment plant, School St., SUNDERLAND, MASS. **$79,000.** CD 8/18.

Eastern Tree Landscape Corp., 280 Bridge St., Dedham, Mass., CA **$126,000,** est. $100,000, site development for Regional School, WHITMAN-HANSON, MASS. Whitman-Hanson Regional School Comn., Supt. Schools, Corthell Bldg., Whitman, Mass. Bids Sept. 2. CD 8/21.

RHODE ISLAND—State R. I. & Prov. Plants, Div. Purch., State House, Providence,

L. Romano Constr. Co., 835 Taunton Ave., East Providence, R. I., CA **$215,885,** hy. work, Daggett Ave. from Armistice Blvd. to Central Ave., R. I. Contr. 5927, F.A. Proj. 5-0224 (2) Pawtucket. CD 8/19, under LB.

Capaldi Bros. Corp., 278 Silver Springs St., Providence, R. I., LB **$185,592,** est. $200,000, sewers, force mains and sewage pumping stations, WOONSOCKET, R. I. City, Purch. Agent, City Hall, Woonsocket, R. I. Bids Sept. 2. CD 8/18.

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford. Bids opened 9/8,

Conn.—**Arute Brothers, Inc.,** 560 South Main St., New Britain, Conn., LB **$3,829,690** (10 bidders), concrete paving 17,607 lin. ft. relocation Rte. U. S. 6, incl. 9 bridges, from 2,750 ft. east of Rte. 25 to Rte. 6, West of Sandy Hook, Federal Aid Proj. 1-84-1 (6) 12. Proj. 96-74, Newtown;

Conn.—**Mariani Constr. Co., Inc.,** 222 Forbes Ave., New Haven, Conn., LB **$1,773,452** (9 bidders), grading, drainage, 2,428 lin. ft. relocation Rte. 8, incl. 5 bridges, from Broad St. to Rte. 67, Federal Aid Proj. U-47-(8). Proj. 124-99, Seymour Co. CD 8/19.

▲ **CONNECTICUT**—State Hy. Comr., 170 Douglas St., Hartford,

L. G. Defelice & Son, Inc., Nettleton Ave., North Haven, Conn., CA **$8,026,990,** concrete paving 20,842 lin. ft. relocation Rte. U. S. 6 incl. bridges of various stands and 7 rein.-con. box culverts from 1,400 ft. east of Lake Ave. to 1,600 ft. east of Railroad, concrete pavement relocation Rte. U. S. 7, incl. two 3-span bridges and 2 rein.-con. box covers, Fed. Aid Projects 1-84-1 (3) and F-5011. Proj. 34-84 and 34-106, Danbury; CA **$2,735,538** concrete paving 17,380 lin. ft. relocation Rte. U. S. 6 incl. 6 bridges from New York State Line to 1,400 ft. east of Lake Ave., Federal Aid Proj. 1-84-1 (7) Proj. 34-95, Danbury. Bids July 20. CD 7/22, under LB.

Hartford Electric Light Co., 266 Pearl St., Hartford, Conn., Owner Builds, **$100,000,** underground conduits for electric lines to connect feeder line to West Side Service Station, Middletown, CONNECTICUT.

J. F. Barrett & Sons, Inc., P.O. Box 195, Devon, Conn., LB **$96,780** (9 bidders). Contr. 38, East Trunk Sewer, Nathan Hale St. to Brooklawn Ave., FAIRFIELD, CONN. Town, 611 Post Rd., Fairfield, Conn. Bids Aug. 31. CD 8/25.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
Mississippi to Rockies
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

BUILDINGS—LB & CA

Stewart & Williams, Inc., 108 Arsenal St., Augusta, Me., CA Approx. **$400,000,** CHURCH, SANFORD, ME. Holy Family Parish, R. C. Diocese, Portland, Me. Albert J. Roy, 120 Front St., Worcester, Mass., archt.

▲ **F. I. Merrill,** 187 Sawyer St., South Portland, Me., CA **$1,222,000,** DISTRIBUTION CENTER, Rumery Industrial Park, SOUTH PORTLAND, ME. Dartmouth Real Estate Co., 290 Baxter Blvd., Portland, Me. Bids Aug. 26. CD 9/2, under LB.

▲ **L. B. Davidson Constr. Co., Inc.,** 1306A Elm St., Manchester, N. H., LB **$2,273,000,** HIGH SCHOOL, S. Porter St. and Webster Rd., MANCHESTER, N. H. City, 88 Lowell St., Manchester, N. H. Bids Sept. 3. CD 8/18.

Davison Constr. Co., Inc., 1306A Elm St., Manchester, N. H., CA **$733,000,** two DORMITORIES, Proj. NH 27-CH-15 (D), Goffstown, MANCHESTER, N. H. St. Anselm's College, College Rd., Manchester, N. H. Bids Aug. 28. CD 9/2, under LB.

Blanchard Stebbins, Inc., 330 Lincoln St., Manchester, N. H., CA **$422,000,** Woodbury HIGH SCHOOL and Central ELEMENTARY SCHOOL addns., SALEM, N. H. Town, Woodbury High School, Salem, N. H. Irving W. Hersey Assoc., Town Hall Bldg., Durham, N. H., archts. CD 6/24, under LB.

Singleton Constr. Co., 390 Pleasant St., Tewksbury, Mass., LB **$556,900,** ELEMENTARY SCHOOL, Davis Rd., BEDFORD, MASS. Town, Supt. Schools, High School Bldg., Mudge Way, Bedford, Mass. Bids Sept. 1. CD 8/7.

C. A. Batson Co., 26 Arlington St., Brockton, Mass., CA **$421,683,** est. $400,000, SUPERMARKET, Reynolds Memorial Hy., BROCKTON, MASS. Tedeschi's Realty Corp., 346 Market St., Rockland, Mass. Bids Aug. 28. CD 8/19.

Vappi & Co., Inc., 240 Sidney St., Cambridge, Mass., CA approx. **$300,000,** PLANT addn., BURLINGTON, MASS. Microwave Development Laboratories, 90 Broad St., Wellesley, Mass. Symmes, Maini & Hryniewicz, 604 Putnam Ave., Cambridge, Mass., archts.-engrs. CD 7/1.

Richard White Sons Co., 70 Crescent St., West Newton, Mass., CA Approx. **$200,000,** FACTORY, 37 Burnett St., JAMAICA PLAIN, MASS. Kinney Mfg. Co. Div. New York Air Brakes Co., 3541 Washington St., Jamaica Plain, Mass. Maurice A. Reidy, 101 Trement St., Boston, Mass., engr.

DelSignore Constr. Corp., 1 Pleasant View St., Worcester, Mass., LB **$666,345,** HIGH SCHOOL, Winslow Ave., LEICESTER, MASS. Town, Supt. Schools, Town Hall, Leicester, Mass. Bids Sept. 2. CD 8/19.

▲ **George A. Fuller Co.,** 11 Beacon St., Boston, Mass., CA Approx. **$2,000,000,** EXECUTIVE HEADQUARTERS, Research Park, Rtes. 2 & 128, LEXINGTON, MASS. Raytheon Mfg. Co., Foundry Ave., Waltham, Mass. Anderson, Beckwith & Haible, 11 Beacon St., Boston, Mass., archts. CD 2/18.

Thomas H. Fallon & Sons Co., Inc., 17 Brackett St., Quincy, Mass., CA Approx. **$400,000,** CHURCH and RECTORY, St. Christine's Parish, MARSHFIELD, MASS. R. C. Diocese of Boston, 1 Lake St., Brighton, Mass. Edward J. Shields Assocs., Inc., 1245 Hancock St., Quincy, Mass., archt.

▲ **Lilly Constr. Co.,** 110 Western Ave., Allston, Mass., CA Approx. **$2,800,000,** SHOPPING CENTER, Rte. 9, Worcester Turnpike, NATICK, MASS. Atlantic Development Co., c/o Samuel Glaser Assoc., archts., 234 Clarendon St., Boston, Mass. CD 9/3.

▲ **Dimeo Constr. Co.,** 511 Westminster St., Providence, R. I., CA **$1,609,500,** est. $1,590,000, REGIONAL HIGH SCHOOL, Rehoboth-Dighton Town Line, REHOBOTH-DIGHTON, MASS. Rehoboth & Dighton Regional School Dist., Dighton High School, Somerset Ave., North Dighton, Mass. Bids Aug. 11. CD 8/13, under LB.

▲ **Frouge Constr. Co., Inc.,** 141 North Ave., Bridgeport, Conn., Owner Builds, **$1,700,000,** 8 story, 102 unit APARTMENT, Cartright St., "Casa Frouge II", BRIDGEPORT, CONN. CD 9/11/58.

Henry Perrault Realty, 3919 Main St., Bridgeport, Conn., Owner Builds, **$590,700,** 33 HOUSES, North End, BRIDGEPORT, CONN.

Kaufman Bros., Huckleberry Hill, Brookfield, Conn., Owner Builds, **$400,000,** BOWLING CENTER, Gray's Bridge Rd., BROOKFIELD, CONN.

Robert Kopnicky, Newtown, Conn., CA **$300,000,** 1 story, 35,310 sq. ft., 165 x 214 ft. PLANT, Gray's Bridge Rd., BROOKFIELD, CONN. Rapid Electric Co., 288 Middletown Rd., New York 61, N. Y. Frank S. Vid Calhoun Ave., New York 61, N. Y., archt.-eng. Awarded Sept. 3.

Irving Woods, Middlesex Road, Darien, Conn., owner builds, **$470,000,** 47 HOUSES, Irving Woods, Middlesex Rd., DARIEN, CONN. CD 6/3.

▲ **Geo. Goldman Enterprises,** Graham Rd., South Windsor, Conn., CA **$1,299,000,** 100 HOUSES, "Colonel

(Continued on page 258)

GALLERY NO. 2 OF

VALUED CLIENTS

MACK TRUCK COMPANY, Plainfield, New Jersey
General Contractor: Wigton-Abbott Corporation
Architect & Engineer: Wigton-Abbott Corporation

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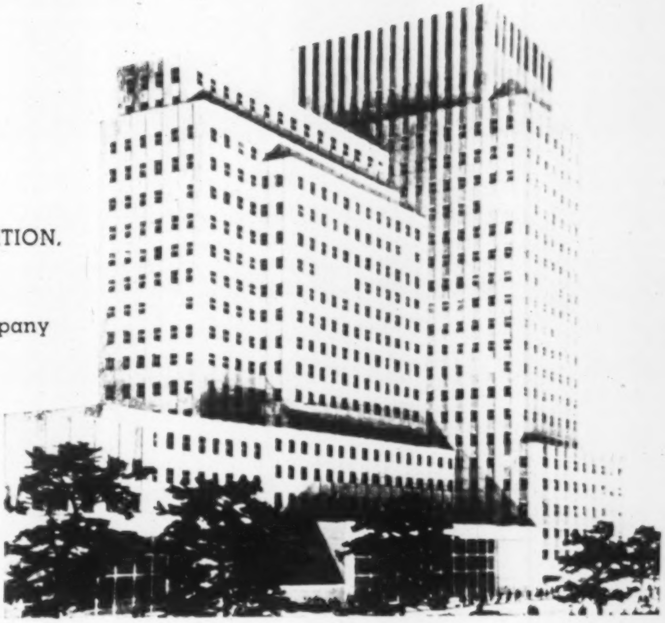
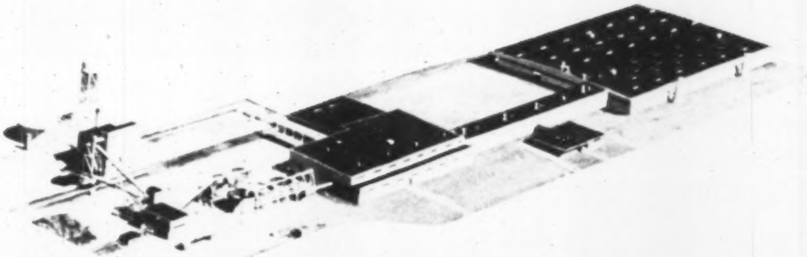
WESTINGHOUSE RESEARCH LABORATORY, Churchill Boro, Pennsylvania
General Contractor: Starrett Brothers & Eken, Inc.
Architect & Engineer: Voorhees, Walker, Smith, Smith & Haines

Westinghouse
RESEARCH

U.S. RUBBER COMPANY BUILDING ADDITION,
New York City, New York
Owner Firm: Rockefeller Center Inc.
General Contractor: George A. Fuller Company
Architect: Harrison & Abramovitz
Engineer: Syska & Hennessy, Inc.



BOSTON GLOBE NEWSPAPER COMPANY,
Boston, Massachusetts
General Contractor: Turner Construction Company
Architect & Engineer: Ganteaume & McMullen



JOHNS-MANVILLE CORPORATION, Klamath Falls, Oregon
General Contractor: George A. Fuller Company
Architect & Engineer: Skidmore, Owings & Merrill

LORD ELECTRIC COMPANY, INC.

BOSTON NEW YORK PITTSBURGH PORTLAND, ORE. RICHLAND, WASH.

CIRCLE 257 READER SERVICE CARD

(Continued from page 255)

Ledyard Estates", Colonel Ledyard Highway, LEDYARD, CONN. Bliven Realty Co., 266 W. Main St., Mystic, Conn. Awarded Sept. 3. CD 7/22.

▲ **Frank R. Wood,** 150 So. Lakewood Circle, Manchester, Conn., Owner Builds, **$1,800,000,** 180 HOUSES, Keeney St., MANCHESTER, CONN. CD 7/31.

▲ **Fusco-Amatruda Co.,** 59 Amity Rd., New Haven, Conn., CA **$1,500,000** (8 bidders), OFFICE, NEW LONDON, CONN. Southern New England Telephone Co., 227 Church St., New Haven, Conn. Bids Sept. 3. CD 8/18.

F. W. Brown Co., Yantic Flats, Yantic, Conn., CA **$500,000,** STORES and MARKETS, "Westgate Shopping Center", 425 Main St., NORWICH, CONN. United Fruit Stores, Boswell Ave., Norwich, Conn. Chandler & Palmer, 16 Franklin St., Norwich, Conn., archts. Awarded Sept. 3. CD 11/20.

Gellatly Constr. Co., 181 Sylvan Ave., Bridgeport, Conn., LB **$200,000** (9 bidders) 2 story, brick, glass and aluminum research laboratory, Hope St., SPRINGDALE, CONN. American Machine & Foundry Co., 689 Hope St., Springdale, Conn. Bids Sept. 1. CD 8/25.

Hillandale Development Co., Daniels Farm Rd., Trumbull, Conn., Owner Builds, **$960,000,** 96 HOUSES, Daniels Farm Rd., TRUMBULL, CONN.

Louis R. Cohn, 25 Tumble Brooklane, West Hartford, Conn., Owner Builds, **$536,300,** 31 HOUSES, Windsor Manor, Matianuck Ave., WINDSOR, CONN.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., West Seneca—BA 9/21—Town, Town Hall, 19,000 ft. Orchard Park Rd. Trunk Sanitary Sewer; 21,000 ft. Cazenovia Creek and East Branch Trunk Sanitary Sewers. Plans deposit $25 each. Krehbiel & Krehbiel, 1868 Niagara Falls Blvd., Tonawanda, engrs. CD 12/18/57.

Pa., Phila.—BA 9/22—Dpt. Procurement, City Hall Annex, Bid 2382 to 2388, inclusive, constr. and reconstr. sewers various locations. CD 11/8/58.

Pennsylvania—BA 9/22—Pa. Dpt. Forests & Waters, 512 Education Bldg., Harrisburg, levee rehabilitation along Lehigh Rivers, Weissport, Carbon Co. Plans deposit $8. CD 6/30/58.

Md., Towson—BA 9/24—Baltimore County Executive, County Office Bldg., Zone 4, Contr. 686 D.S.&W, storm drain, sewer and water main extensions. Plans deposit $5. CD 11/6/57.

N. J., Newark—BUILDING ADDNS.—BA 9/24—The Port of New York Auth., Dpt. Purch. & Admin. Services, Room 900, 111 Eighth Ave., New York 11, N. Y., building 82 and 83 addns., Contr. 0 and M-472. Plans deposit $10.

Pa., Phila.—FOUNDATIONS AND TUBULAR ALUMINUM POLES, etc.—BA 9/24—Dpt. Procurement, City Hall Annex, rein.-con. fdns. and erection tubular aluminum poles and trombone arms for traffic signals and modified aluminum "C" posts for controller mounting on Packer and Pattison Aves., between Swanson St. and 11th St., for Dpt. Streets. CD 5/21/58.

Pa., Phila.—BA 9/24—Dpt. Procurement, City Hall Annex, grading, bit. concrete paving (assessment work) asphalt paving (assessment work) bit. concrete paving (assessment work) cement concrete repaving; traffic safety island; cement concrete repaving, incl. reconstr. sewer, traffic signal installation work, any location in city, grading. CD 11/28/58.

▲ **N. Y., Wheatfield**—BA 9/28—Town, Town Hall, water distr. sys. $2,939,275. Krehbiel & Krehbiel, 1868 Niagara Falls Blvd., Tonawanda, engrs. CD 1/30.

N. Y., Jackson Heights—AIRPORT IMPRVS.—BA 9/29—Port of New York Auth., Rm. 1100, 111 Eighth Ave., New York, Zone 11, taxiway and apron pavement, LaGuardia Airport, Contr. LGA-290.002. Plans deposit $10. CD 6/24/57.

N. Y., Brooklyn—BA 9/30—Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York, Zone 7, Contr. I-OH-3, structures and equipment; Contr. I-OH-4, heating and ventilating; Contr. I-OH-5, plumbing work; Contr. I-OH-6, electrical work of gas booster bldg. at Owls Head Pollution Control Proj. Brooklyn Boro. Plans deposit $20.

▲ **N. Y., New York**—BA 10/1—Dpt. P. Wks., Rm. 1800L, Municipal Bldg., New York, Zone 7, Contr. 2, lift span in connection with constr. Broadway Bridge over Harlem River Ship Canal, Manhattan Boro. Plans deposit $60. DC 5/19.

† **N. Y., North Bellmore**—EXCLUSION AREA—BA 10/1—U. S. Eng., 111 E. 16th St., New York, Zone 3, exclusion area, Bellmore Field Maintenance Shop, Serial No. ENG-30-075-60-45. $5,000-$10,000.

BUILDINGS—BA

Md., Westminster—HOSPITAL—BA 9/22—Carroll Co. General Hospital, Inc., Washington Rd., masonry, steel, block, concrete 50-bed medical surgical unit. B. E. Starr, 410 N. 2nd St., Harrisburg, Pa., archt. CD 1/26.

N. J., Linden—SCHOOL—BA 9/22—City, City Hall, high school addn. $900,000. Merchant, Seidel & Hickey, 1 Elm Row, New Brunswick, archts. CD 10/12/55.

▲ **N. Y., Dunkirk**—COUNTY HOME, etc.—BA 9/25—Bd. Supervs. Chautauqua Co., Court House, Mayville, county home and infirmary. $1,800,000. Plans deposit $60. Beck & Tinkham, 100 E. 4th St., Jamestown, archts.-engrs. CD 1/12.

▲† **N. Y., Brookhaven**—NUCLEAR ENGINEERING BLDG.—BA 9/29—U. S. Atomic Energy Comn., Brookhaven Area, Engineering and Constr. Branch, Bldg. 464, 53 Bell Ave., Brookhaven National Laboratory, Upton, Inv. NY 5-60, Nuclear Engineering Bldg., Brookhaven National Laboratory, Upton. Plans deposit $35. Seeley, Stevenson, Value & Knecht, 101 Park Ave., New York, N. Y., archts.-engrs. CD 8/24.

Pa., Shamokin—HOSPITAL—BA 9/30—General State Auth., 18th and Herr Sts., Harrisburg, Shamokin State Hospital addn., imprvs. $500,000. Plans deposit $10. A. L. Wiesenberger Assocs., 529 Hamilton St., Allentown, archts.-engrs. CD 7/30, under LB.

† **Md., Annapolis**—FIRE PROTECTION—BA 9/23—Area P. Wks. Office, Chesapeake, U. S. Naval Weapons Plant, Wash., D. C., fire protection, Field House Bldg. 352, Naval Academy, NBy-25001. $25,000-$100,000.

New York—RESIDENCE BLDGS.—BA 9/25—Triborough Bridge & Tunnel Auth., Admin. Bldg., Randall's Island, New York, Zone 35, Throgs Neck Bridge Contr. No. TN-13, two residence bldgs. at Fort Schuyler. Plans deposit $15. CD 1/20/55, under Bridges.

BUILDINGS—SLC

D. C., Wash.—DORMITORY—Dunbarton College, 2935 Upton St. N.W., soon lets contract dormitory. F. Wallace Dixon, 1832 M St. N. W., archt. Bids Aug. 26 rejected. CD 9/1, under LB.

HEAVY CONSTRUCTION—LB & CA

General Bronze Corp., 711 Stewart Ave., Garden City, N. Y., CA **$375,000,** furnishing, del. 13 hatch covers for Lewiston Power Plant, Niagara Power Proj. NP 38, Niagara Co., NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Aug. 18. CD 8/27, under LB.

Redhill Assocs., Inc., 337 Hempstead Turnpike, West Hempstead, N. Y., LB **$138,800,** (13 bidders), general contract parkway maintenance bldg., for Long Island State Park Comn., Belmont Lake State Park, Babylon, NEW YORK. Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Sept. 2. CD 6/19/44.

Victor J. Georgetti, 310 Riverside Blvd., Long Beach, N. Y., LB **$836,511,** (7 bidders), Freeport Brook Drain from Tidewater, Freeport-Hempstead, MINEOLA, N. Y. Bd. Supervs. Nassau Co., Old County Court House, Mineola, N. Y. Bids Sept. 8. CD 8/14.

State Dpt. P. Wks., State Office Bldg., Albany, N. Y., rejected bids Aug. 19, imprv. of grounds, County Assistant's Office and Storehouse, Bldg. 1, New York State Dpt. P. Wks., Dist. 8, NEW CITY, N. Y.

▲ **Intercounty Constr. Corp.,** 4720 Balto Ave., Hyattsville, Md., LB **$988,570,** No. 1. force mains, intercepting sewers, appurtenances STEELTON, PA. Steelton Borough Auth., Municipal Bldg., Steelton, Pa., Bids Sept. 1. CD, 8/5;
Moseman Constr. Co., 2311 N. Front St., Harrisburg, Pa., LB **$367,120,** No. 1. pumping stations (Steelton, Pa.)

Baltimore Gas & Elec. Co., Lexington Bldg., Baltimore 3, Md., Owner Builds, **$180,000,** electric transmission line from Northeast Station to Windy Edge Station, northern part, BALTIMORE, MD. CD 1/8/58.

† **Allied Contractors, Inc.,** Oella, Md., LB **$92,289** (11 bidders), access roads, bridge, parking for Water Sports Center, Rock Creek and Potomac Parkway, WASH., D. C. National Park, Dpt. Interior, Wash., D. C. Bids Sept. 1. CD 8/14.

Henry C. Eastburn & Son, Inc., Chestnut Hill and Marow Rd., Newark, Del., CA **$114,815,** taxiway and lighting system, County Airport, NEW CASTLE, DEL. New Castle County Levy Court, Public Bldg., Wilmington, Del. Vindemark & Lynch, 311 W. 12 St., Wilmington, Del., engrs. CD 8/6/53.

BUILDINGS—LB & CA

Stackler & Frank, c/o Trylon Realty Co., 98-89 Queens Blvd., Forest Hills, N. Y., Owner Builds, **$640,000** (addnl. section) 40 HOUSES, Union Ave. and Captree Parkway, BABYLON, N. Y.

The Channels Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, **$420,000,** 15 HOUSES, Whitman Dr., BROOKLYN, N. Y.

▲ **Wilaka Constr. Co., Inc.,** 11 E. 44th St., New York 17, N. Y., LB **$1,657,000** (7 bidders), general contract PUBLIC SCHOOL 274, Kosciusko St. and Bushwick Ave., BROOKLYN, N. Y. Bureau Contr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 1. CD 8/10.

AMF Atomics, Inc., 11 Bruce Ave., Greenwich, Conn., CA one megawatt pool type RESEARCH REACTOR, Nuclear Research Center, BUFFALO, N. Y. University of Buffalo, 3435 Main St., Buffalo, N. Y. CD 6/3.

▲ **Fischer-Malik, Inc.,** 11 Moffitt Blvd., Bay Shore, N. Y., CA **$1,924,072,** general contract SENIOR HIGH SCHOOL, DEER PARK, N. Y. Bd. Educ. Union Free School Dist. 7, Deer Park Ave., Deer Park, N. Y. Bids Aug. 11. CD 7/30.

Country Village Homes, c/o Trylon Realty Co., 98-89 Queens Blvd., Forest Hills, N. Y., Owner Builds, **$450,000** (addnl. section) 30 HOUSES, Montauk Hy., EAST ISLIP, N. Y.

Colonial Park Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, **$420,000** (addnl. section), 20 HOUSES, Robinson Ave., GLEN COVE, N. Y.

Robin Hood Park Homes, c/o Buon Pane Realty Co., 107 Woodbury Rd., Hicksville, N. Y., Owner Builds, **$400-**

(Continued on page 260)

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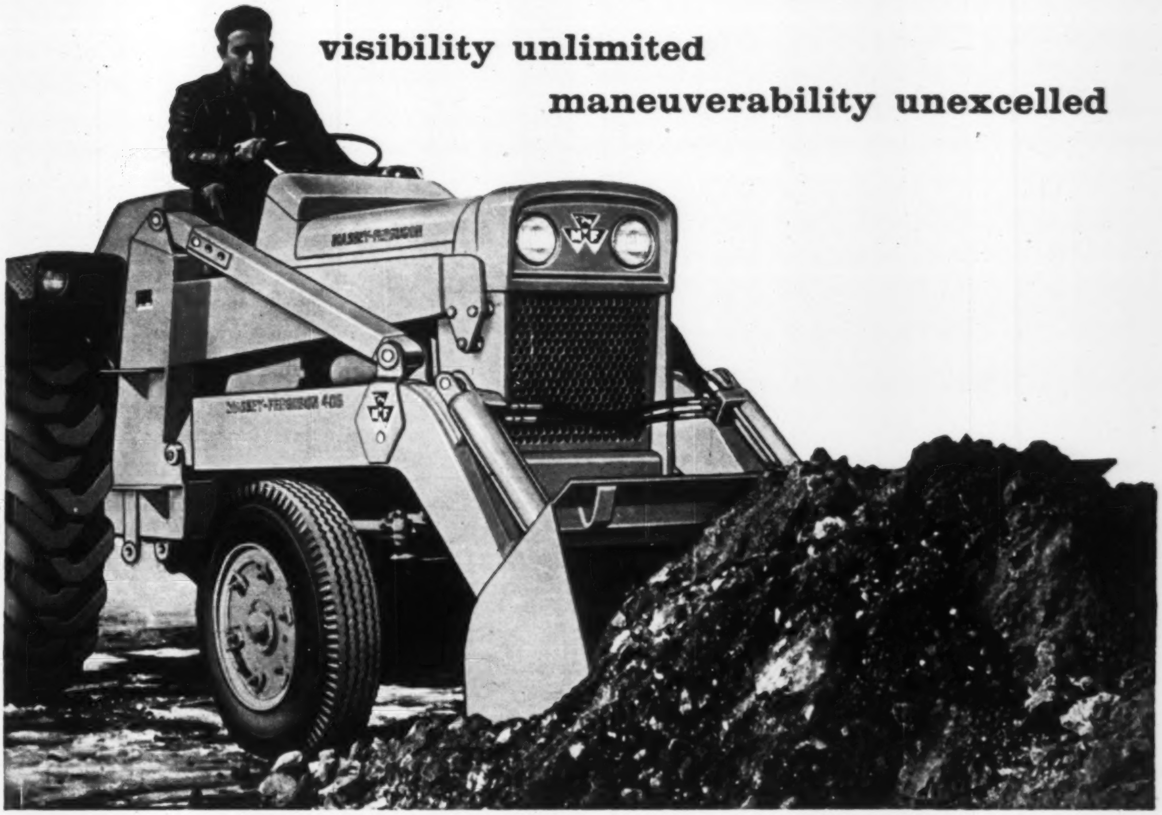
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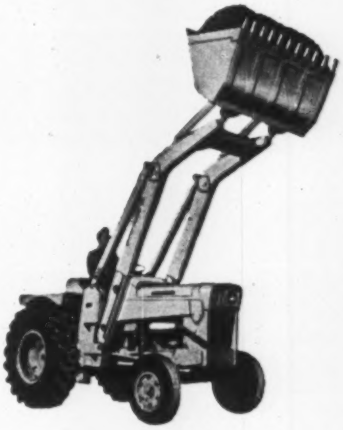

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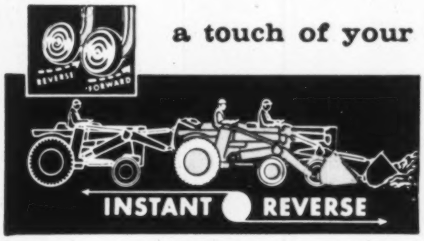
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(Continued from page 258)

.000 (addnl. section), 27 HOUSES, East Ave., HICKSVILLE, N. Y.

Arbor Oaks Homes, c/o The Strathmore Agency, 665 E. Jericho Turnpike, Huntington Station, N. Y., Owner Builds, $500,000, 20 HOUSES, East Deer Park Rd., HUNTINGTON, N. Y.

Belterre Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $400,000, 25 HOUSES, Leslie Lane near Park Ave., HUNTINGTON, N. Y.

Holiday Hill Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $750,000, 26 HOUSES, Cherry Lane near Northern Blvd., HUNTINGTON, N. Y.

Pickwick Park Homes, c/o Alfred Wolff, Jericho Turnpike, Commack, N. Y., Owner Builds, $500,000 (addnl. section), 30 HOUSES, Clay Pitts Rd. east of Larkfield Rd., HUNTINGTON, N. Y.

Point of Woods Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds $420,000, 25 HOUSES, Wolf Hill Rd., HUNTINGTON, N. Y.

A. M. Hunter & Son, Inc., 19 Dutcher St., Irvington-on-Hudson, N. Y., CA Est. $430,090, HIGH ENERGY RESEARCH BLDG., Nevis Cyclotron Laboratory, IRVINGTON-ON-HUDSON, N. Y. Columbia University, 116th St. and Broadway, New York 27, N. Y. Ferrenz & Taylor, 1451 Broadway, New York, N. Y., archts.

▲ **Avella Constr. Co.,** 215 E. 149th St., New York 51, N. Y., LB $2,040,000, (10 bidders), general contract CLASS ROOM and LIBRARY BLDG. (Bldg. 8), alterations to Bldgs. 3&7, New York State School of Industrial and Labor Relations at Cornell University, ITHACA, N. Y. Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Sept. 2. CD 3/27/57.

Echo Hills Homes, c/o The Strathmore Agency, 665 E. Jericho Turnpike, Huntington Sta., N. Y., Owner Builds, $560,000 (addnl. section) 40 HOUSES, Indian Head Rd., KINGS PARK, N. Y.

Rosewood Homes, c/o Trylon Realty Co., 98-89 Queens Blvd., Forest Hills, N. Y., Owner Builds, $600,000 (addnl. section), 20 HOUSES, I. U. Willets Rd., MANHASSET, N. Y.

▲ **John W. Rouse Constr. Co.,** 8 Church St., Gouverneur, N. Y., CA Est. $1,500,000, 4 story, 150-room HOTEL, Main St., MASSENA, N. Y. Schine Enterprises, Inc., 350 Fifth Ave., New York 1, N. Y. Lapidus, Kornblath, Horle & Liebman, 256 E. 49th St., New York 17, N. Y., archts. CD 2/17.

▲ **Robin Hill Homes,** c/o Lorenzo D. Bement, 392 Sunrise Hy., Islip, N. Y., Owner Builds, $1,000,000, (addnl. section) 100 HOUSES, Vanderbilt Parkway, NORTH BRENTWOOD, N. Y.

Sherbrooke Manor Homes, c/o Alfred Wolff, Jericho Turnpike, Commack, N. Y., Owner Builds, $450,000, (addnl. section), 30 HOUSES, Rte. 111, SMITHTOWN, N. Y.

Walter A. Stanley Constr. Co., Inc., 23 Railroad Ave., Ossining, N. Y., CA $929,000 general constr. INDUSTRIAL SHOP, incl. service connections, Green Haven Prison, STORMVILLE, N. Y. State Dpt. P. Wks., State Office Bldg., Albany, N. Y. CD 7/29, under LB.

Honeyspot Estates Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $460,000 (addnl. section), 20 HOUSES, Convent Rd., east of Jackson Ave., SYOSSET, N. Y.

Birchwood Park Homes, c/o Traynor & Oesterich, So. Marginal Rd., Jericho, N. Y., Owner Builds, $440,000 (addnl. section) 20 HOUSES, Broadway, WESTBURY, N. Y.

The Gates Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $450,000, 15 HOUSES, Jericho Turnpike, WOODBURY, N. Y.

Young-Rich Assocs., 347 Madison Ave., New York 17, N. Y., CA $582,950, DORMITORY and BAKERY, Honor Annex Prison Farm, YAPHANK, N. Y. Bd. Suprvs., Suffolk Co., Riverhead, N. Y. Beatty & Berlenbach, 32 Court St., Brooklyn 2, N. Y., archts. CD 9/4.

Fleetfellow, Inc., 1147 E. Jersey St., Elizabeth, N. J., Owner Builds, $400,000, 15 HOUSES, Central Ave., BERKELEY HEIGHTS, N. J.

▲ **Larsen & Olsen,** 197 Sylvan Ave., Leonia, N. J., LB $1,077,777, general contract John Hill HIGH SCHOOL addn., BOONTON, N. J. Bd. Educ., Township of Boonton, Boonton, N. J. Micklewright & Mountford, E. Stuyvesant, Trenton, N. J. archts. CD 9/13/56.

Ray Favaro & Frank Furman, c/o Pasford Ltd., 30-01 Broadway, Fair Lawn, N. J., Owner Builds, $425,000, 15 HOUSES, Campbell Rd., FAIR LAWN, N. J.

Richard Estates, Inc., Ridgeway Rd., Toms River, N. J., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Spruce Ave., etc., LAKEWOOD, N. J.

Mainland Regional High School Dist., Linwood, N. J., rejected bids, HIGH SCHOOL, athletic field, etc., LINWOOD, N. J. LB $972,414, will re-advertise. CD 8/27, under LB.

Ace Builders, 230 Banta Ave., Garfield, N. J., LB $587,626, (9 bidders), general contract, HIGH SCHOOL addn., LITTLE FALLS, N. J. Bd. Educ., Passaic Valley Reg. High School Dist., Little Falls, N. J. Bids Sept. 3. CD 8/20.

▲ **Dominick Stamato,** 121 Avondale Ave., Clifton, N. J., Owner Builds, $1,000,000, 24 HOUSES, Francisco Ave., LITTLE FALLS, N. J.

▲ **The Glenwal Corp.,** U. S. Hy. 46, Saddle Brook, N. J., CA Est. $3,600,000, STORE ADDN., Park Place-Speedwell Ave. (for L. Bamberger & Co., Newark, N. J.), MORRISTOWN, N. J. Elblum Holding Corp., 100 Park Place, Morristown, N. J. Bids Aug. 25. CD 7/31.

Gumina Bldg. & Constr. Co., Larch Ave., New Brunswick, N. J., CA $900,000, est. $1,000,000, SCHOOL, NEW BRUNSWICK, N. J. Diocese of Trenton and Parish of St. Peter, 175 Somerset St., New Brunswick, N. J. CD 10/10/58.

Bryan Constr. Co., Inc., 171 River Rd., North Arlington, N. J., CA $505,000, est. $700,000, PARKING GARAGE, NEW BRUNSWICK, N. J. Parking Auth., City of New Brunswick, City Hall, New Brunswick, N. J. Bids Aug. 11. CD 8/5.

William Sterling & Co., 2525 Pine St., Phila. 3, Pa., CA $491,074, Bid 4206, general contract, POLICE STATION, 17th St. and Montgomery Ave., PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids July 13. CD 7/30, under LB.

Allen C. Minnix, 216 C St. N.W., Wash., D. C., LB $557,777 (7 bidders), brick, concrete steel, block Oxon Hill SENIOR HIGH SCHOOL addn., Oxon Hill, MARLBORO, MD. Prince George's County Bd. Educ., Upper Marlboro, Md. Bids Sept. 3. CD 8/21.

▲ **John Tester & Son,** Clinton, Md., CA $1,670,000, (5 bidders), OFFICE BLDG., southside East-West Hy. opposite new Prince George's Plaza Shopping Center, RIVERDALE, MD. Kiplinger Washington Editors, Inc., 1729 H N. W., Wash., D. C. Chatelain, Gauger & Nolan, 1632 K St. N. W., Wash., D. C., archts. Bids Sept. 2. CD 8/20.

▲ **Victor R. Beauchamp,** 431 Cedar St., N. W., Wash., D. C., CA $2,492,218 La Reine HIGH SCHOOL, 4900 Silver Hill Rd. for Bernadine Sisters, SUITLAND, MD. Archdiocese of Washington, 1721 Rhode Island Ave. N. W., Wash., D. C. Bids Aug. 27. CD 9/1 under LB.

▲ **Mullan Contr. Corp.,** 3945 Greenmount Ave., Baltimore 18, Md., CA $1,963,640, masonry, concrete steel, block ACADEMIC BLDG. GYMNASIUM and RESIDENCE Goucher Blvd. and LaSalle Ave., near TOWSON, MD. Calvert Hall College, Mulberry and Cathedral Sts., Baltimore 1, Md. Bids Sept. 1. CD 9/3, under LB.

▲ **Willard Woodrow Constr. Co.,** 1012 14th St. N. W., Wash., D. C., CA Est. $5,000,000, design and construct 250 HOUSE RESIDENTIAL DEVELOPMENT, Lynda City, WALDORF, MD. Lefcourt Realty Corp., 357 Park Ave., New York, N. Y.

▲ **Merando Inc.,** 4098 Minnesota Ave., N. E., Wash., D. C., LB $1,369,425, (13 bidders), REPAIR SHOP, record center and warehouse 2000 Adams Place N. E., WASH., D. C., D. C. Government Bldgs. & Grounds, 499 Pa. Ave., N. W., Wash., D. C. Bids Sept. 2. CD 8/20.

Naylor Rd. Shopping Center Inc., c/o Joseph H. Kinski, 1101 Vermont Ave., N. W., Wash., D. C. Owner Builds, $500,000, 1st section SHOPPING CENTER, Alabama Ave., Naylor and Good Hope Rds., S. E. WASH., D. C.

▲ **R. A. Prendergast & Son,** 3010 Sunset Ave., Atlantic City, N. J., LB $2,299,897 (4 bidders), JUNIOR-SENIOR HIGH SCHOOL, DELAWARE CITY, DEL. Gunning Bedford School Dist., Delaware City, Del. Bids Sept. 2. CD 8/26.

SOUTH

HEAVY CONSTRUCTION—BA

Fla., Tallahassee—BA 9/23—City, City Hall, elevated steel water storage tank, $175,000. Plans deposit $10. Reynolds, Smith & Hills, 227 Park St., Jacksonville, engrs. CD 11/3/50.

† **Ky., Lexington**—BA 9/24—RADIATION SHIELDING—BA 9/24—U. S. Eng., P. O. Box 59, Louisville, Zone 1, radiation shielding Nucleonics Bldg., Lexington Signal Depot, ENG-15-029-60-6. Over $100,000.

† **Fla., Tampa**—BA 9/25—Seventh Coast Guard Dist., 150 SE 3 Ave., Miami, Zone 32, navigation aids, Hillsboro Bay, Tampa, Inv. 96900. Plans deposit $5.

† **La., Houma**—ROAD IMPRVS., etc.—BA 9/25—U. S. Eng., Box 1229, Galveston, Tex., reconstr. roadways, parking area and drainage ditches Houma Air Force Base, IFB-22-600-60-15. CD 9/11/58.

Va., Fairfax—BA 9/28—Board of County Supervisors, Office of Sanitary Engineer, Fairfax, Integrated Sewerage System, Contract 92, Lower Pimmit Run Trunk (Plant to C. I. A. Outfall); and Contract 93 Lower Pimmit Run Trunk (C. I. A. Outfall to Arlington Line). CD 2/13.

Alabama—TELEPHONE LINES—BA 9/29—Thorsby Telephone Co., Thorsby, 150 mi. telephone lines, Chilton Co. $155,000. Plans deposit $10. J. B. McCrary Eng. Corp., Atlanta Federal Bldg., Atlanta, Ga., engr.

† **Kentucky**—BA 10/1—Union County Soil Conservation Dist., P. O. Box 120, Morganfield, Ky., imprv. Cypress Creek stream channel beginning approx. 5.8 mi. northwest of Sturgis and ending approx. 2 mi. southwest of Sturgis, Union Co. Inv. No. 5-60-CY.

Ky., Russell—BA 10/5—City, City Hall, water sys. imprvs. Contr. 1, water wells and well pumps; Contr. 2, water mains; Contr. 3, water pumping station; Contr. 4, reservoir fdn.; Contr. 5, 1 m.g. steel reservoir; Contr. 6, filtration plant; Contr. 7, heating and plumbing; Contr. 8, electrical work. Plans deposit $35. The Chester Engineers, 601 Suismon St., Pittsburgh 12, Pa. engrs. CD 10/23/57.

W. Va., Huntington—BA 10/5—Huntington Sanitary Bd., Contr. No. 25B, mechanical work, Four Pole Pump Station; Contr. No. 26, electrical work, Four Pole Pump Station; Contr. No. 34, West Force Main between Four Pole Creek and West 22 St. Plans deposit $50. The Chester Engineers, 601 Suismon St., Pittsburgh 12, Pa., engrs. CD 4/3/56.

Fla., Jacksonville—BA 10/6—City, City Hall, Lateral Sewer Proj. MES 15-16, $275,000; remodeling Hubbard St., Sewage Pumping Station, Proj. MES 15-20, $175,000. Plans deposit $25 each. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. CD 10/1/53.

† **Louisiana**—BA 10/6—U. S. Eng., foot of Prytania St., New Orleans, Item 90.0-R, foreshore protection Norman Levee, New Orleans. Inv. 60-49.

† **Louisiana**—BA 10/7—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, Item M-56.8-R, Woodpart Levee restoration, right descending bank of Mississippi River at approx. Mile 56.8 A.H.P., Plaquemines Parish, CIVENG-16-047-60-50. CD 9/23/58.

† **La. Houma**—IE & AUTO MAINTENANCE SHOP—BA About 10/8—U. S. Eng., Box 1229, Galveston, Tex., IE & auto maintenance shop, Houma Air Force Station, ENG-41-243-60-9. $25,000-$100,000. CD 9/11/58.

Ala., Mobile—BA 10/13—Mobile Co. Bd. Revenue, Courthouse, pave 1.75 mi. Gill Rd., pave 1.75 mi. Middle Ring and Athey Rds.; pave 1 mi. Scenic Highway; resurf. and 4-lane Craft Highway in Prichard, 2.4 mi., resurf. and 4-lane Bay Bridge Rd. in Prichard, 1.01 mi. resurf. 5.75 mi. Irvington-Bayou Le Batre Rd., and 20 Sts. in Bayou Le Batre resurf. 5.75 mi. Cottage Hill Rd., resurf. 5.85 mi. Belling Grath Highway; resurf. 10.5 mi. Tanner Williams Rd.; resurf. 12 mi. Citronelle-Mt. Vernon. Bids Aug. 25, rejected. CD 8/31, under LB.

† **Louisiana**—BA 10/13—U. S. Eng., foot of Prytania St., New Orleans, La., Item M-17.6-R, restoration of commander foreshore protection, Plaquemine Parish. Inv. 60-51.

BUILDINGS—BA

Ga., Atlanta—FEDERAL AVIATION AGENCY—BA 9/23—Fulton Co. Comrs. of Roads & Revenues, Admin. Bldg., bldg. for Federal Aviation Agency. Plans deposit $50. Percy H. Perkins, Jr., 1368 W. Peachtree St. N. W., archt.

Ala., Anniston—HOSPIATL—BA 9/24—Memorial Hospital, Anniston, hospital addn., $400,000. Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, archts.

La., New Orleans—Y.M.C.A.—BA 9/29—Bd. of Y.M.C.A., 936 St. Charles St., 10 story, rein.-con. frame, brick, tile, concrete, block Y.M.C.A. addn. Roessle & von Osthoff, 936 St. Charles St., archts.

La., Thibodaux—SCHOOL—BA 10/6—Lafourche Parish School Bd., Thibodaux, 1 story, rein.-con. frame, brick elementary school, Lockport. Plans deposit $30. Fernand T. Picou, Citizens Bank, archt. CD 3/10/53.

Fla., Miami—SCHOOL—BA 10/7—Dade Co. Bd. P. Instruction, Admin. Bldg., 275 N. W. 2 St. Carol City Elementary School, NW 191 Terrace and N. W. 98 Court, $400,000. Plans deposit $50. Smith & Korach, 1630 Lenox Ave., Miami Beach, archt. CD 4/15.

BUILDINGS—SLC

N. C., Charlotte—SCHOOL—Charlotte Country Day School, Sardis Rd., soon lets contract 45,000 sq. ft. school, $650,000. A. G. Odell, Jr. & Assocs., 109 W. 3rd St., archts. CD 9/2.

N. C., Lenoir—PLANT—Clarandoe Mfg. Co., Lenoir, soon lets contract, 25,000 sq. ft. metal stamping and casting plant, $150,000. Harold Hartley, P. O. Box 591, Lenoir, archt. CD 7/3.

Va., Norfolk—BOWLING ALLEY—Ghent Medical Center Corp., 210 Granby St., soon lets contract 1 story, 265 x 120 ft., steel frame, brick bowling alley, $450,000. Paul Woodward, Flatiron Bldg., archt. H. Bregman, 1216 Granby St., consult. engr.

HEAVY CONSTRUCTION—LB & CA

W. H. Belanga Constr. Co., 619 W. 25th St., Norfolk, Va., LB $626,480, (3 bidders), 1 story, 662x200 ft., brick bldg., incl. general office, plumbing and heating, NORFOLK, VA. Port of Norfolk Auth., Bd. Trade Bldg., Norfolk, Va. General Mower Co., Buffalo, N. Y., lessee. Lubin & McGaughy, 220 W. Freemason St., Norfolk, Va., archts. Silver Assocs., Blair Bldg., Norfolk, Va., engrs. CD 10/23/56.

C&C Constr. Co., 4625 Industrial Rd., Fort Wayne, Ind., LB $154,784, est. $150,000 (6 bidders), sewerage, Byrd Airport, RICHMOND, VA. City, The Mosque, Richmond, Va.

† **Atkinson Dredging Co.,** 2615 Canal Rd., Norfolk, Va., CA $275,200, maintenance dredging, Wilmington Harbor, CIVENG-31-075-60-1, NORTH CAROLINA. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Aug. 20. CD 7/15.

Utilities Constr. Co., 1301 Meeting St., Charleston, S. C., CA Est. $100,000, 110,000 volt electric transmission lines from Sumter to Kingstree, SOUTH CAROLINA. Carolina Power & Light Co., 419 Fayetteville St., Raleigh, N. C.

† **Bob Edwards Constr. Co.,** P.O. Box 365, Dahlonega, Ga., LB $119,902, access roads and utilities Buford Dam, Swinnett and Forsyth Counties, ENG-01-076-60-5; GEORGIA. U. S. Eng., P.O. Box 1169, Mobile, Ala. Bids Sept. 2. CD 8/12.

▲ **Foster & Creighton Co.,** American National Bank, Nashville, Tenn., LB $1,522,276, widening Piedmont Ave. N.E., ATLANTA, GA. Fulton Co. Bd. Comm., 165 Central Ave. S.W., Atlanta, Ga. Bids Sept. 2. CD 4/30/57.

(Continued on page 262)

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FOR MOVING EARTH, ROCK, COAL AND ORE

(Continued from page 260)

E. Jack Smith, 3158 Maple Dr. N.E., Atlanta, Ga., CA **$242,450,** grandstands for auto racing track, HAMPTON, GA. Atlanta International Raceway, 1022 Mortgage Guarantee Bldg., Atlanta, Ga. CD 5/27, under LB.

▲ **FLORIDA**—State Rd. Dpt., Holland Bldg., Tallahassee,

Fla.—**Smith Constr. Co. of Florida,** Drawer 1831, Pensacola, Fla., CA **$1,474,999,** stabilized base Type 2 surf. tr. Job. No. 58630-3602, SR S-399 stabilized base with Type 2 surf. tr. 10.958 mi. and 4.273 mi. respectively, SR S-399 State Proj. Job. No. 48530-3601, Escambia and Santa Rosa Counties;

Fla.—**Duval Eng. & Constr. Co.,** Box 1488, Jacksonville, Fla., CA **$1,314,630,** 4-lane divided c. conc. paving limerock base shoulder with Type 1-A surf. tr. limerock base Type 1 b. conc. surf. course and binder course 1.412 mi. SR 8 FAI Proj. No. I-10-5(2) 354 Job No. 72270-3476, Duval Co.;

Fla.—**Cone Bros. Constr. Co.,** Box 1259, Tampa, Fla., CA **$1,400,717,** 4-lane divided limerock base Type 1 b. conc. surf. course with binder course stabilized base shoulder with Type 1-A surf. tr. 6.06 mi. SR 400 FAI Proj. No. I-4-2 (18) 80, Jobs Nos. 92130-3402 and 75280-3403 Osceola and Orange Counties. Grand total $4,190,346. Bids Aug. 28, awarded Sept. 3. CD 7/31, under LB.

Bumby & Stimpson, P.O. Box 2608, Orlando, Fla. LB **$127,741,** water lines, GULFPORT, FLA. City, City Hall, Gulfport, Fla. Bids Sept. 3.

Intercounty Constr. Corp., 2100 N. Dixie Highway, Winter Manor, Fla., LB **$360,000** (14 bidders), water distr. system, sewage collection system, sewage pumping station, sewage force main, sewage treatment plant addn., Hallandale-Miramar, HOLLYWOOD, FLA. Miramar Utilities, Inc., Box 2871, Hollywood, Fla. Bids Aug. 10. CD 8/3.

J. & J. Land Co., Inc., 6500 49th St., Pinellas Park, Fla., CA Est. **$100,000,** clearing, grading 340 acres land for Tierra Verda Subdivision, ST. PETERSBURG, FLA. Tierra Verda Corp., c/o Rader & Assocs., engrs., 611 1st Ave. N., St. Petersburg, Fla. CD 6/24.

C. P. Bamberg, Contractor, 26 Watson Circle, Montgomery, Ala., LB **$128,000,** lay 8 mi. gas mains Hunter Station area N. of Montgomery, Montgomery Co., ALABAMA. Alabama Gas Corp., 1918-1st Ave. N., Birmingham, Ala.

Irby Constr. Co., 815 S. State St., Jackson, Miss., LB **$201,554,** electric distr. lines, Morgan and Lawrence Counties, ALABAMA. Joe Wheeler Electric Membership Co-operative, Hartselle, Ala. CD 7/18.

Southern Bell Telephone Co., 1706 2 Ave. N., Birmingham, Ala., Own Forces, **$100,000,** install addnl., telephone cable facitities in W. Huntsville, Madison Co., ALABAMA.

▲ **Southern Bell Telephone Co.,** 1706 2 Ave. N., Birmingham, Ala., Own Forces, **$1,000,000,** local dial system and long distance direct dial system, ATHENS, ALA.

Hodgson-Blake, 1551 Highland Ave., & M. R. Thomason, Birmingham Hy., both Montgomery, Ala., CA **$573,612,** concrete cover over 0.75 mi. storm drainage ditch from Elliott to Union St., MONTGOMERY, ALA. City, City Hall, Montgomery, Ala. Awarded Sept. 1. CD 8/31, under LB.

Bowyler & Johnson, Jackson, Miss., CA **$119,235,** grading, drainage, box culverts, double bit. surf. 2.977 mi. Hy. 6 (Hurricane Rd.), Proj. FAS S-1836(1)B, PONTOTOC, MISS. Bd. Suprvs. Pontotoc Co., Court House, Pontotoc, Miss. Bids Aug. 7.

Warren Bros. Roads Co., Lake Norris Rd., Columbus, Miss., LB **$93,642,** bit. surf., grading, curbing, gutters, etc., 1.365 mi., WEST POINT, MISS. City, City Hall, West Point, Miss. Bids Aug. 6. CD 2/25.

LOUISIANA—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 8/19,

Core Contg. Co., Covington, La., LB **$244,882** (2 bidders), aggreg. type or soil cement base course 5.118 mi. Springfield-Southwest Hy., Rte. LA 1037, SP No. 832-20-07, Livingston Parish. CD 8/5.

† **Wm. M. Cowgur & Co., Inc.,** 721 Olive St., St. Louis, Mo., LB **$145,170** (9 bidders), 20,000 tons riprap Berm protection levee GIWW, Mississippi River, Inv. 60-26, Plaquemine and Orleans Parishes, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids Sept. 2. CD 8/14.

Koller Constr. Co., Box 29, Houma, La., LB **$204,409,** (8 bidders), water dist. sys., BRUSLY, LA. Parish Water Works Dist. No. 2, Brusly, La. Bids Aug. 31. CD 8/12.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort, Bids opened 9/4,

McDowell & McDowell, 718 Murfreesboro Rd., Nashville, Tenn., LB **$1,749,946,** (8 bidders), grade, drain 3.114 mi. Pineville-Harlon, F 151 (10) SP 7-64, Bell Co. CD 8/20.

Aldridge-Podge Co., P.O. Box 1024, Lexington, Ky., LB Est. **$90,000,** 48,426 lin. ft. natural gas distr. sys. and transmission lines, MOUNT OLIVET, KY. Mount Olivet Natural Gas Co., Mount Olivet, Ky. Bids Aug. 17. CD 8/14.

TENNESSEE—State Hy. Dpt., Nashville,

Anderson-Gregory Co., Inc., 613 Sudekum Bldg., Nashville, Tenn., CA **$795,524,** drainage, surf. with crushed stone and bit. materials (plant mix intersection jct. of Rte. Nos. 12 and 13 and surf. treat. and seal on remainder of proj.) 3 bridges, 7.132 mi. relocated State Rte. 12, Proj. SP-1112-C, Montgomery Co. Bids Aug. 28. CD 9/2, under LB.

Pierce Ditching Co., 1901 E. Center St., Kingsport, Tenn., CA **$201,500,** water distr. sys., WATAUGA, TENN. Watauga Water & Utility Dist., Watauga, Tenn.

BUILDINGS—LB & CA

Old Stage Motor Lodge, Inc., 4303 Hill St., Richmond Va., Owner Builds, **$600,000,** two "L" shaped MOTEL UNITS, CHESTERFIELD, VA. James E. Harper, 12 Terry St., Staunton, Va., archts. CD 9/4.

† **Reid & Hope,** 153 N. Main St., Suffolk, Va., LB **$586,000** (12 bidders), ADMINISTRATION BLDG. No. 135, Proj. 45-5172, KECOUGHTAN, VA. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Sept. 1. CD 7/22.

† **Hugh C. Strickland, Inc.,** Glenn Ave., Winston-Salem, N. C., CA **$589,718,** conversion Wherry housing units to PUBLIC QUARTERS, Naval Amphibious Base, NBy 24225, Spec. 24225/59, LITTLE CREEK, VA. Dist. P. Wks. Office, 5th Naval Dist., Room 307, Bldg. N-26, U. S. Naval Base, Norfolk, Va. Bids Aug. 25. CD 8/28, under LB.

▲ **M. E. Howard Constr. Co.,** 708 Dawn St., Richmond, Va., CA **$1,350,000,** general contract MOTEL, Broad St. and Byrd Ave., near here, RICHMOND, VA. Cavalier Motels, Inc., 2020 W. Broad St., Richmond, Va. Norman M. Giller & Assocs., 975 Arthur Godfrey Dr., Miami, Fla., archts.

H. L. Coble Constr. Co., 1705 Battleground Ave., Greensboro, N. C., CA Est. **$650,000,** PLANT ADMIN. OFFICE, ENKA, N. C. American Enka Corp., 530 5th Ave., New York, N. Y. CD 6/25.

Dickerson, Inc., Monroe, N. C., LB **$549,350,** 110,000 sq. ft. INDUSTRIAL BLDG., FAYETTEVILLE, N. C. Community Development Corp., c/o Arthur C. Jenkins, archt., 118 Mason, Fayetteville, N. C. Cofer, Rouse & Jeglinski, 3913 Waler Ave., Greensboro, N. C., engrs. Bids Aug. 26.

D. R. Allen & Son, 239 Robeson St., Fayetteville, N. C., LB **$496,648,** NCO CLUB BLDG. FORT BRAGG, N. C. Purchasing & Contracting Office, Fort Bragg, N. C. CD 9/18/57.

W. Roy Poole, 104 E. Gordon St., Kinston, N. C., Day Labor **$750,000,** 75 RESIDENCES, KINSTON, N. C.

J. R. Graham & Son, Inc., P.O. Box 1767, High Point, N. C., CA **$531,619,** MADISON-MAYODAN HIGH SCHOOL, MADISON, N. C. West Rockingham Cities Admin. Unit, Madison High School, Madison, N. C. Bids Aug. 18. CD 8/28, under LB.

R. K. Stewart & Sons, 1519 S. Main St., High Point, N. C., CA **$608,000,** WAUGHTOWN JUNIOR HIGH SCHOOL, WINSTON-SALEM, N. C. Winston-Salem City School, Rm. 10, City Hall, Winston-Salem, N. C. Bids Sept. 3. CD 8/24.

Christman & Parsons, Contractors, 170 Reidville Rd., Spartanburg, S. C., CA Est. **$125,000,** PLANT addn., GAFFNEY, S. C. Cherokee Finishing Co., Gaffney, S. C.

▲ **Southern Builders, Inc.,** 1717 West End Ave., Nashville, Tenn., Own Forces, **$1,000,000,** 7 story, 100,000

(Continued on page 266)

Sand would scrape the markings off *most* tapes!

This is Lufkin's Super HiWay®. Engineers and layout men swear by it. The big reason: it has a Chrome Clad® line that defies defacement . . . by sand, mud, grit or years of use.

Raised markings and protective borders are a part of the tape itself . . . and will last as long. The line is .025" thick with a rust-resistant base coat and a series of electroplatings, topped by a final layer of tough chrome. It's the most durable tape line made.

Available in 100′, 200′ and 300′ lengths with or without reels. Three choices of end markings plus chainman's conversion rule.

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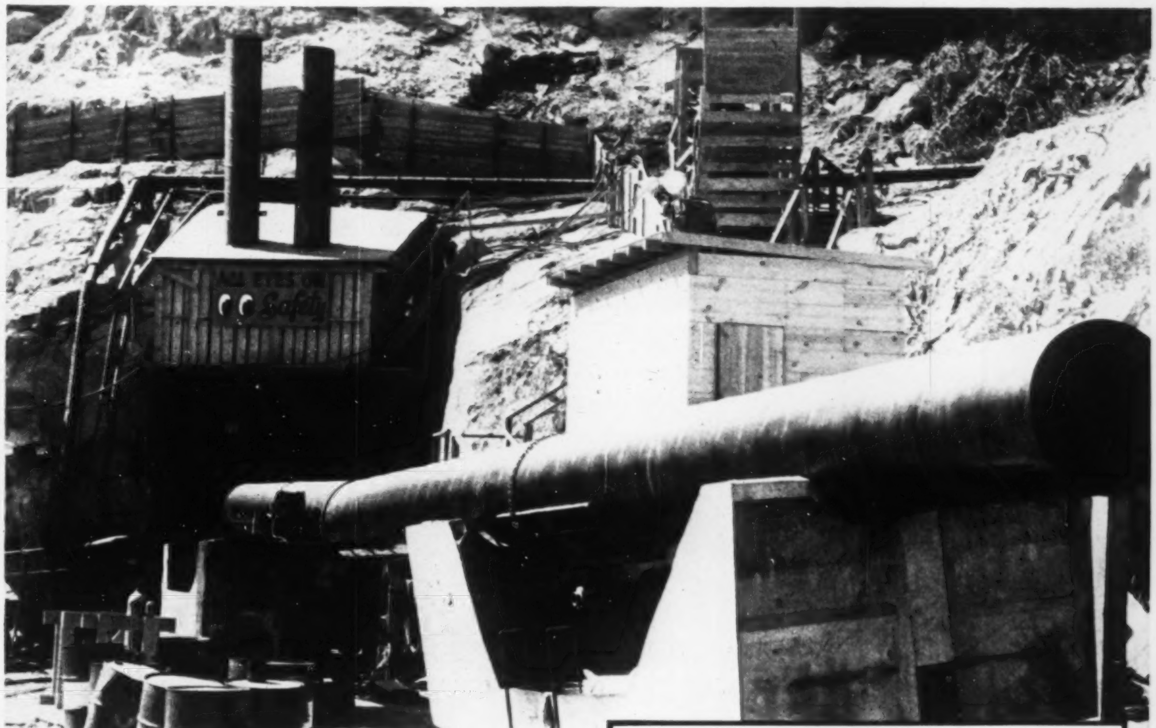
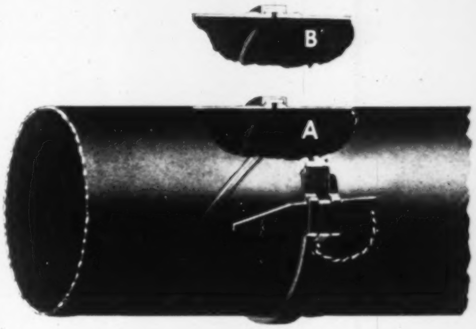


Speaking of safety, you can't go far underground without dependable pipe lines to bring in fresh air and exhaust smoke, gases and fumes.

NAYLOR Spiralweld pipe and Wedgelock couplings provide the ideal combination for ventilating lines in tunnel operations. The pipe is light in weight and easy to handle and install. The spiral-lockseam construction builds in the extra strength needed for push-pull service. And the NAYLOR Wedgelock coupling insures faster installation because connections can be made with only one side of the pipe in the open.

Whether you need pipe for handling ventilation, water or dredging service, it will pay you to consider the advantages of this NAYLOR combination.

Write for Bulletin No. 59



The **NAYLOR LOW-PRESSURE WEDGELOCK** coupling provides a fast, positive connection. Ideal for ventilating service because it saves space and permits the line to hug the wall. **NAYLOR** pipe is furnished with (**A**) accurately-sized shoulder ends or (**B**) with grooved ends for this advanced-type coupling.

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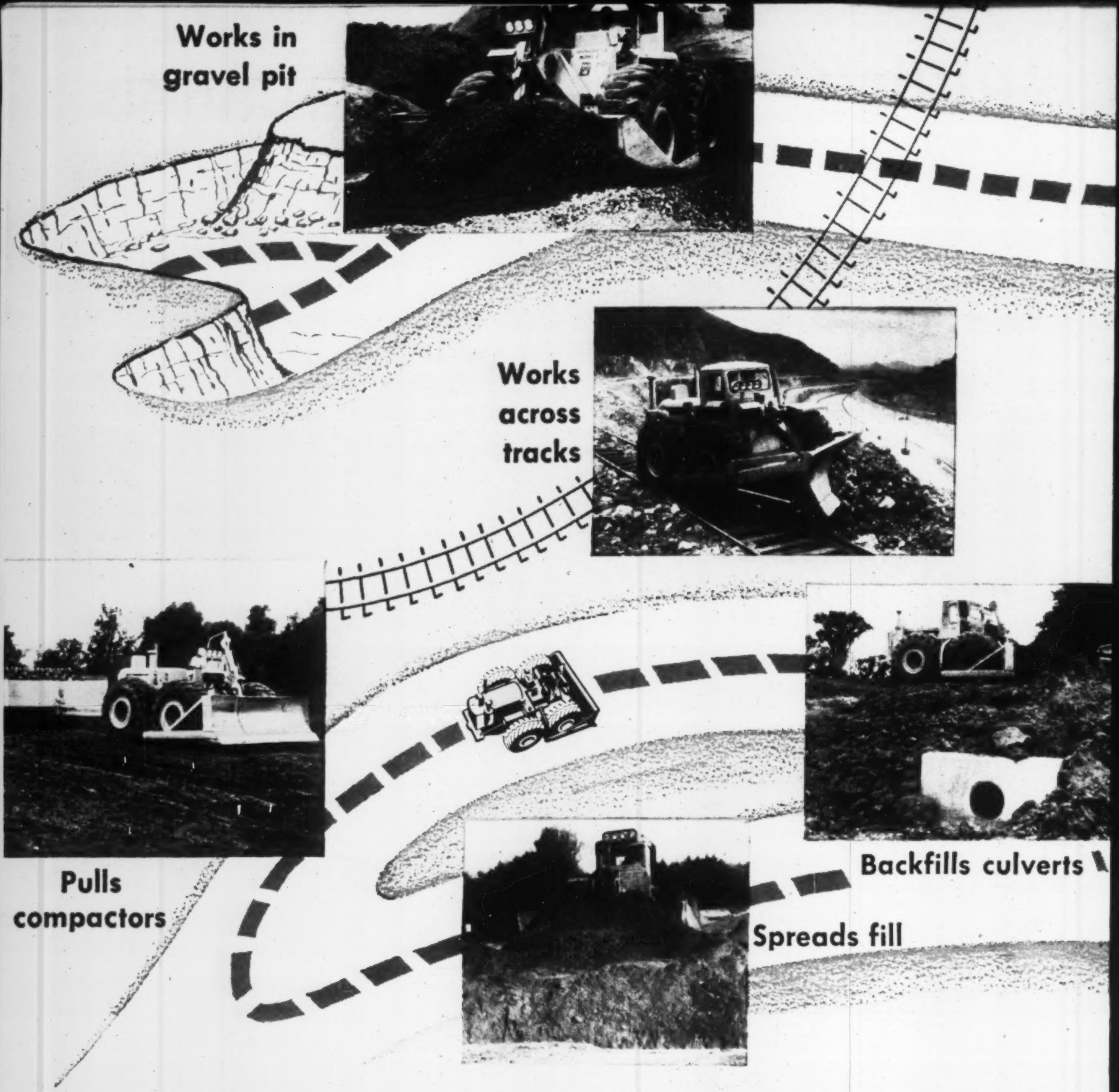
CIRCLE 263 READER SERVICE CARD

CIRCLE 264 READER SERVICE CARD →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Works across tracks
Pulls compactors
Backfills culverts
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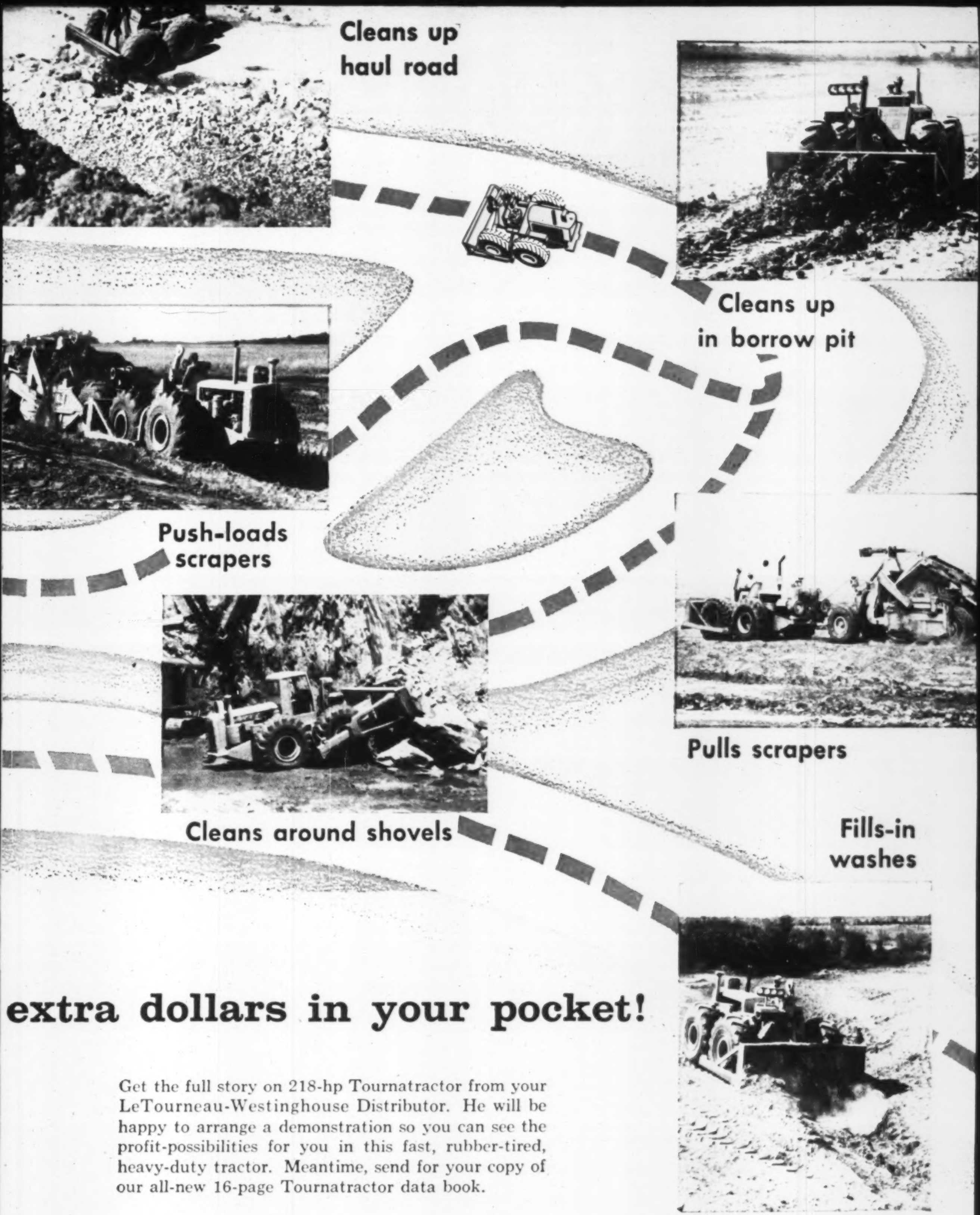
RUNS from one assignment to another, at speeds to 17.2 mph. Travels anywhere, without "piggy-back" assistance.

Handles more tractor jobs over a wider area...faster

Because of its rubber-tired *speed* . . . *power* . . . and *mobility* . . . Tournatractor gets around the job *fast* . . . often does the work of 2 or 3 slow-moving crawlers. You need *fewer* tractors on your spread when you work a Tournatractor . . . and the saving is *yours*.



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LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

(Continued from page 262)

sq. ft. OFFICE, 26 and Peachtree Sts., ATLANTA, GA. Robert Hall, 3355 Poplar Ave., Memphis, Tenn., archt.

Claussen-Webster Constr. Co., P.O. Box 840, Augusta, Ga., CA **$620,080**, main LIBRARY, AUGUSTA, GA. Bd. Comrs. Richmond Co., 116 8 St., Augusta, Ga. Bids Aug. 25. CD 9/2, under LB.

▲ **A. B. Newton & Co.**, Vidalia, Ga., CA **$1,071,848** low rent HOUSING, incl. 124 dwelling units and community bldg., ALA 48-4, DECATUR, GA. Housing Auth., 1701 Lucust St., Decatur, Ala. Bids Aug. 19. CD 8/6.

† **Southern Constr. Co.**, P.O. Box 1307, Augusta, Ga., CA **$813,723**, rehabilitation Wherry HOUSING, ENG-09-133-60-4, FORT BENNING, GA. U. S. Eng., 200 East St. Julian St., Savannah, Ga. Bids Aug. 8. CD 7/9.

Bonnie Dell Builders, Inc., 410 Roswell St., Marretta, Ga., Day Labor, **$400,000.** 40 RESIDENCES, MARIETTA, GA.

B F M, Inc., P.O. Box 270, Bainbridge, Ga., CA **$507,330**, 60 HOUSING UNITS, Proj. GA 60-1, MOULTRIE, GA. Moultrie Housing Auth., 739 3rd Ave. S. E., Moultrie, Ga. Bids Aug. 25. CD 9/2, under LB.

Pine Grove Homes, 1111 Myrtle Lane, Cocoa, Fla., Day Labor, **$700,000**, Pine Grove RESIDENTIAL SUBDIVISION, COCOA, FLA.

▲ **William A. Berbusse, Jr.**, 322 Royal Palm Way, Palm Beach, Fla., LB **$1,680,000**, PHARMACY WING and ANIMAL FACILITIES, University of Florida, State Proj. 0836, GAINESVILLE, FLA. Florida State Bd. Control, Admin. Bldg., University of Florida, Gainesville, Fla. Bids Sept. 2. CD 8/11.

Lee Constr. Corp., 5436 SW 8 St., Coral Gables, Fla., Owner Builds, **$400,000**, 40 RESIDENCES, SW 34 and 35 St. and SW 107 Ave., MIAMI, FLA. Gerard Pitt, 4375 Ingraham Highway, Miami, Fla., archt.

▲ **Leonard Constr. Co.**, 37 South Wabash Ave., Chicago 3, Ill., CA design and construct 500 tons per day SULPHURIC ACID PLANT, NICHOLS, FLA. Virginia-Carolina Chemical Co., 401 E. Main St., Richmond, Va.

J. E. Johnson, 1014 Bank St., Decatur, Ala., CA **$125,000**, mfg. PLANT, HARTSELLE, ALA. City, City Hall, Hartselle, Ala. The Fly Co., lessee.

Chapman Brothers, 404 Pearl St., Greenwood, Miss., CA **$126,604**, general contract PLANT, GREENWOOD, MISS. City, City Hall, Greenwood, Miss. Supreme Electronics Corp., 1714 Carrollton Ave., Greenwood, Miss., lessee. James E. McAdams, 217 Aven Bldg., E. Washington St., Greenwood, Miss., archt. Awarded Sept. 4. CD 12/2/57.

Sullivan & Cozzart, 822 W. Kentucky St., Louisville, Ky., LB **$257,800** (6 bidders), 125x200 ft. concrete slab, metal siding MANUFACTURING BLDG., WAREHOUSE and OFFICES, Strawberry Lane, LOUISVILLE. KY. Shuler Axle Co., 2901 S. 2nd St., Louisville, Ky. Bids Sept. 1. CD 8/26.

▲ **Whittenberg Constr. Co.**, 2214 S. Floyd St., Louisville, Ky., CA **$1,405,000**, STATE OFFICE, 6th and Cedar, LOUISVILLE, KY. Commonwealth of Ky., Div. Purchases, Frankfort, Ky. Bids Aug. 25, awarded Sept. 4. CD 8/7, under LB.

▲† **Farnsworth & Chambers, Inc.**, P.O. Box 74, Houston 1, Tex., LB **$1,029,382**, "Bird Cage" facility incl. WAREHOUSE, ADMIN. BLDG., etc. for storing atomic weapons, CLARKSVILLE, TENN. Atomic Energy Comn., Clarksville Naval Base, Clarksville, Tenn. Bids Sept. 3. CD 8/14.

Farrar Constr. Co., McMinnville, Tenn., CA **$600,000**, 109,000 sq. ft. steel, concrete, brick FACTORY, McMINNVILLE, TENN. City, City Hall, McMinnville, Tenn. Century Electric Co., lessee. Awarded Aug. 27. CD 7/20.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

O., **Oregon**—BA 9/23—City, City Hall Section 1, 15,980 ft. 16 and 20 in. water mains, 2,300 ft. 6- to 12-in. mains with necessary valves, appurtenances. Plans deposit $25. Finkbeiner, Pettis & Strout, 2130 Madison Ave., Toledo, engrs. CD 5/11.

† **Wisconsin**—BA About 9/29—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., maintenance dredging to depth of 21 ft. below low water datum, in Milwaukee, Menomonee and Kinnickinnic Rivers, Milwaukee Harbor, CIVENG-11-032-60-4. CD 2/18/44.

† **Illinois**—BA 9/29—U. S. Eng., 420 Locust St., St., Louis 2, Mo., upper gate sills Locks No. 27, alterations, Chain of Rocks Canal, Mississippi River, Madison Co., vicinity of Granite City between approximate Mississippi River Miles 186 and 187 above mouth of Ohio River, CIVENG-23-065-13. CD 8/31.

† **Ohio**—BA 10/1—U. S. Eng., 237 4th Ave., Huntington 18, W. Va., readjustment Licking Twp. Road No. 60 (Section 1) and relocation Licking Twp. Road No. 47 (Section 1), Dillon Reservoir Proj., approx. 5.9 mi. northwest of Dillon, CIVENG-46-022-60-9. CD 9/4.

BUILDINGS—BA

O., **Oxford**—DORMITORY—BA 9/24—Dpt. P. Wks., State Dpts. Bldg., Columbus, women's dormitory No. 8, Miami University, $950,000. Plans deposit $20. Cellarius & Hilmer, 4th and Main, Cincinnati, archts. CD 7/3.

Wis., **Milwaukee**—CHURCH, etc.—BA 9/29—Corpus Christi Catholic Congregation, 5200 N. 84 St., church and school. $400,000. Plans deposit $25. Herbst, Jacoby & Herbst, 1249 N. Franklin Place, archts. CD 6/10.

Ill., **Chicago**—FACTORY, etc.—Bids Asked—Hammond Organ Co., 4200 W. Diversey Ave., structural steel, concrete factory and office addn. $200,000. Skadberg Olson Co., 2532 N. Milwaukee Ave., archt.

O., **Oxford**—DINING HALL—BA 10/8—Dpt. P. Wks., State Dpts. Bldg., Columbus, men's dining hall addn. No. 3, Miami University, $500,000. Plans deposit $20. Cellarius & Hilmer, 4th and Main, Cincinnati, archts. CD 7/3.

BUILDINGS—SLC

O., **Canton**—PHYSICAL EDUCATION, etc— Malone College, 515 25th St. N.W. (soon lets contract) physical education and assembly. $520,000. Arnold Peterson, 1468 W. 9th St., Cleveland Zone 13, archt. CD 8/19.

HEAVY CONSTRUCTION—LB & CA

OHIO—Dpt. Hys., State Dpt. Bldgs., Columbus, Zone 15, Bids opened 9/1,

O.—**L. R. Skelton**, 3099 Sullivant Ave., Columbus, O. LB **$290,922**, est. $314,200, (5 bidders), Type T-71 0.724 mi. SR 747-1.59, Proj. 456, Hamilton Co.

O.—**Arthur S. Langenderfer, Inc.**, 4690 W. Bancroft St., Toledo, O., LB **$102,103**, est. $116,500, (2 bidders), Type T-35 1.222 mi. U.S.R. 6 (12.95-13.36) USR 24-(8.55-8.56) City of Napoleon, Proj. 457, Henry Co.;

O.—**Northwood Stone & Asphalt Co.**, RFD No. 2, Belle Center, O., LB **$192,843**, est. $192,800, (1 bidder) Type T-34 6.31 mi. USR 68(1.94)(9.59), Proj. 479, Logan Co.

O.—**The William L. Schloss Paving Co.**, 9521 Woodland Ave., Cleveland, O., LB **$103,018**, est. $119,710, (2 bidders) Type T-30, B-35, T-35 8.94 mi., Proj. 482, Lorain and Median Counties. CD 8/10.

Lee Turzillo Contg. Co., 9329 Riverview, Cleveland, O., CA **$98,507**, repair work to Twenty-seventh St. bridge, Kenmore area, AKRON, O. City, City Hall, Akron, O. Awarded Sept. 2. CD 12/10/48.

S. A. Ruebel & Co., Ross Ave., St. Bernard, O. LB **$95,359** (5 bidders) sanitary sewer, Ebenezer Rd. and Strochen Dr., CINCINNATI, O. Bd. Comrs. Hamilton Co., Courthouse, Cincinnati, O. Bids Sept. 1. CD 8/27.

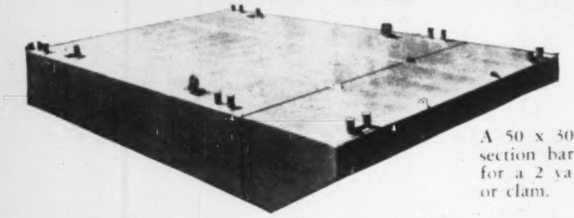
Great Lakes Constr. Co., 6600 Schaaf Rd., Cleveland 9, O., LB **$459,711**, est. $537,000, (6 bidders), imprv. Harvard Rd. from Northfield to Richmond Rds., Warrensville, CLEVELAND, O. Comrs. Cuyahoga Co., 451 County Admin. Bldg., 1219 Ontario, Cleveland 13, O. Bids Sept. 3. CD 8/18.

Complete General Constr. Co., 1221 E. 5th Ave., Columbus, O., LB **$787,750** (7 bidders), Phase 1, Big Run Sanitary Trunk Sewer from treatment plant to Gantz Rd., COLUMBUS, O. City, City Hall, Columbus, O. Bids Sept. 1. CD 9/2.

A. Gaudio & Sons, 23500 Lakeland Blvd., Cleveland 23, O., LB **$172,199**, est. $160,000, (5 bidders), E

(Continued on page 268)

MANITOWOC
SECTIONAL BARGES



A 50 x 30 foot four-section barge suitable for a 2 yard dragline or clam.

- For floating all sizes of lift cranes, clams, draglines and other contractors' equipment.
- Easily assembled or knocked down for moving by rail or highway.
- Sections can be assembled into numerous barge sizes.
- Spuds, deck fittings, loading ramps and other accessories available.

Above, a sectional barge completely assembled with crane, spuds and deck equipment ready to go to work.

Designed for the contractor who needs low cost, flexible and portable floating equipment, a typical clam operation performed from a sectional barge.

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bad weather?

slippery going?

soft spots?

Why not check how LW Rear-Dumps
__haul__ __through__ where other haulers bog down!

Note these LeTourneau-Westinghouse Tournapull® "haul-anywhere" features:

1. Exclusive power-transfer differential . . . *automatically* transfers power from a slipping drive-wheel to wheel on better footing.
2. 90° kingpin-steer . . . independent of drive-train . . . helps 'Pull* operator "duck-walk" out of trouble. He just flips electric steer-switch left, right, left, etc., to swing drive-wheels side to side until they "walk" out and reach solid footing.
3. Big, single, low-pressure tires provide traction and flotation . . . grip the surface and stay on top of ground instead of digging in. Self-cleaning tread design keeps tires clean for excellent traction under all conditions.
4. Independent braking, front and rear, permits "humping" Rear-Dump out of soft spots. Bowl is raised with front brakes locked and rear brakes released, shortening wheelbase. Then, with rear brakes set and front brakes released, bowl is lowered, pushing prime-mover forward. Thus, without use of drive, Rear-Dump "humps" forward onto firm ground.

These LW features add up to fewer hauling delays . . . more yardage delivered . . . bigger profits. LW Tournapulls with Rear-Dumps are available in 11, 22, and 35-ton sizes. Ask for full specifications.

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LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

CIRCLE 267 READER SERVICE CARD

(Continued from page 266)

222nd St. sanitary relief sewer, EUCLID, O. City, City Hall, Euclid, O. Bids Aug. 31. CD 8/12.

L. T. Boccia Constr. Co., Inc., 434 Robins, Youngstown, O., CA **$90,193**, (11 bidders), St. Clair Interceptor Sewer, GIRARD, O. City, City Hall, Girard, O. CD 10/3.

Chicago Bridge & Iron Co., Republic Bldg., Cleveland 15, O., LB **$55,945**, est. $117,000, (4 bidders), elevated water tank, JEFFERSON, O. Village, Village Hall, Jefferson, O. Bids Sept. 1. CD 8/28.

Deltse Constr. Co. and Fairview Park Excavating Co. 27265 Bagley Rd., Berea, O., LB **$775,027**, est. $830,000, Robbins Ave., Interceptor Sewer, NILES, O. City, City Hall, Niles, O. CD 2/19.

▲ **Focht Bros. Constr. Co.**, 416 Wentz St., Tiffin, O., LB **$686,343**, est. $750,000 (18 bidders), sewage disposal plant, STRUTHERS, O. City, City Hall, Struthers, O. Bids Aug. 28. CD 7/27.

J. R. Savage Constr. Co., 770 Woodbury, Columbus, O., LB **$518,000**, (13 bidders), interceptor sewers, Section A (Struthers, O.);

Crano Constr. Co., 2800 N. Turkeyfoot, Akron, O., LB **$190,685**, (13 bidders), interceptor sewers, Section B (Struthers, O.).

† **U. S. Eng.**, 237 4th Ave., Huntington, W. Va., cancelled bids to have been opened Sept. 17, security facilities for readiness crew bldg., Clinton County Air Force Base, Linn Co., ENG-46-022-60-3, WILMINGTON, O. CD 8/27.

INDIANA—State Hy. Comn., State House Annex, Indianapolis, Zone 4.

Smith & Johnson, Inc., 1799 Kentucky Ave., Indianapolis, Ind., CA **$320,702**, est. $352,986, 3 rein.-con. girder spans over N. Fork Lewis Creek, also, 4 continuous steel beam and rein.-con. girder spans over I. Rte. 74, also, 3 rein.-con. girder spans over N. Fork Lewis Creek on county road, Contr. 4603, Shelby Co. Bids Mar. 26, awarded Aug. 24. CD 4/3, under LB.

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis,

McMahan Constr. Co., Rochester, Ind., and **Berns Constr. Co.**, 312 E. Washington St., Indianapolis, Ind., CA **$2,479,602**, est. $2,750,666, rein.-con. pavement 5.192 mi. I-70, Contr. R-4711, Wayne Co. Bids June 30. CD 7/8, under LB.

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis,

Ind.—**Contracting & Material Co.**, 7150 E. Washington St., Indianapolis, Ind., CA **$2,257,680**, est. $2,488,487, rein.-con. pavement 5.492 mi., I-465, I-65, Contr. R-4710, Marion Co. Bids May 28. Awarded Aug. 7.

Ind.—**Rieth-Riley Constr. Co., Inc.**, Goshen, Ind., CA **$1,002,640**, est. $1,134,612, rein.-con. pavement 5.434 mi. SR 46 Contr. R-4714. Grand total $3,260,320. CD 6/8, under LB.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

H. H. Mass Constr. Co. and **Macon County Asphalt Co.**, Main St., Algonquin, Ill., CA **$522,195**, wid'n. 8.86 mi. Ill. 105 from Bement to Cerro Gordo, Piatt Co. Bids Aug. 24. CD 8/27, under LB.

F. S. Crook, 104 Market St., St. Louis, Mo., CA **$162,105**, water works, water treatment plant, 9th St. near Wood River, BETHALTO, ILL. Village, Village Hall, Bethalto, Ill. Awarded Aug. 17. CD 1/10.

Three-A Builders, 1270 Maxwell Ave., Evansville, Ind., CA **$187,501**, sanitary sewers, Healey St. to Kirby Rd., CHAMPAIGN, ILL. City, City Hall, Champaign, Ill. Bids Aug. 18. CD 7/16.

John Dillon & Co., 2953 S. Halsted St., Chicago, Ill., LB **$139,605**, (3 bidders), paving playgrounds, various locations, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Aug. 28. CD 6/11/57.

Mary Constr. Co., 131st. St. and Southwest Hy., Palos Park, Ill., CA **$433,680**, est. $600,000 bridge approaches, Cal-Sag Channel, incl. 400,000 sq. yd. embankment, 8,700 sq. ft. road, Lambert, CHICAGO, ILL. Gulf Mobile & Ohio Railroad, 104 Francis St., Mobile, Ala. Bids July 15. CD 6/26.

Western R. R. Supply Co., 2742 W. 36th St., Chicago, Ill. LB **$527,590**, est. $250,000 REE-2767-59, track equipment, furnish and equip. automatic block signals Congress St., between Laramie and DesPlaines Aves., CHICAGO, ILL. Chicago Transit Authority, Merchandise Mart, Chicago, Ill. Bids Sept. 3. CD 8/17.

DuPons Constr. Co., Inc., Spring St., Cary, Ill., CA **$395,448**, W.W. West Side Pumping Station, HIGHLAND PARK, ILL. City of Highland Park, City Hall, Highland Park, Ill. Awarded Sept. 2. CD 9/12/58.

MacDougal-Hartman Co., 3101 NE Adams St., Peoria, Ill. CA site preparation for Technical Center on 240 acre tract, Mossville, PEORIA, ILL. Caterpillar Tractor Co., 600 W. Washington, E. Peoria, Ill. CD 1/22/57, under Industrial Buildings.

Sangamo Constr. Co., 700 N. MacArthur St., Springfield, Ill., CA **$295,559**, Town Branch, Storm Sewers, open concrete channel, SPRINGFIELD, ILL. City, City Hall, Springfield, Ill. Bids Aug. 13, awarded Aug. 19. CD 7/15.

Quad City Constr. Co., 644 25th Ave., Rock Island, Ill. LB **$829,080**, Div. B, 24- to 72-in. relief sewers, 8 in. sanitary sewers, QUINCY, ILL. City, City Hall, Quincy, Ill. Bids Aug. 24. CD 8/14.

C. A. Hooper Co., 2030 Pennsylvania Ave., Madison, Wis., LB **$121,890**, (6 bidders), steam service to Physical Education Bldg., STEVENS POINT, WIS. Bd. of Regents of State Colleges, Madison, Wis. Bids Aug. 27. CD 8/19.

Payne & Dolan, 735 N. Water St., Milwaukee 2, Wis., LB **$142,508** (2 bidders), priming base and surf. streets, WAUWATOSA, WIS. City, City Hall, Wauwatosa, Wis. Bids Aug. 27. Francis D. Kuckuck, city engr.

MICHIGAN—State Hy. Dpt., Escanaba,

Proksch Constr. Co., 132 Third Ave., Iron River, Mich., CA **$518,035**, grading, drainage, structures 20 ft. bit. aggreg. surf. 13.7 mi. M 69 from Hylas in Dickinson County southeasterly to point 2 mi. northwest of Whitney in Menominee Co., Dickinson and Menominee Counties. Bids Aug. 19. CD 8/25, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Mason Bldg., Lansing, Bids opened 9/2.

Mich.—**Michigan Colprovia**, 2020 Chicago Dr. S.W., Grand Rapids, Mich., LB **$118,011**, 22 ft. b. conc. surf. 2.9 mi. Byron Center Ave. north from 84th St. at Byron Center, Kent Co. CD 7/14/55;

Mich.—**John G. Yerington**, Rte. 3, Box 34, Benton Harbor, Mich., LB **$103,432**, b. conc. surf. 0.5 mi. intersection M 139 and Napier Ave., Benton Twp., Berrien Co.

Mich.—**Charles Nurrie Co.**, 1342 Portage St., Kalamazoo, Mich. and **Armond Cassill, Inc.**, 17738 Mack Ave., Detroit, Mich., LB **$527,023**, relocation Pennsylvania railroad tracks 2.6 mi. Hughart Yard for right-of-way for Grand Rapids Expressway, Grand Rapids, Kent Co. CD 8/20.

Mich.—**DiBasio & Turchetti**, 23580 Oneida Ave., Oak Park 37, Mich., LB **$173,812**, ramp revisions on Ford Expressway at Livernois Ave., Ford-Lodge interchange and John R St. and on Lodge expressway at Livernois Ave. and Howard St., Wayne Co. CD 8/20.

Mich.—**Smith Brothers**, Cassopolis, Mich., LB **$451,996**, 24 ft. b. conc. 6.7 mi. M 37 from approx. 1½ mi. south of Yuma north to west limits of Mesick and M 115, Wexford Co.

Mich.—**Walter F. Hutfilz**, 2850 Bay Rd., Saginaw, Mich., LB **$267,602**, prime and double seal 3.2 mi. M 43 from north limits of Hastings northerly, Barry Co.

Mich.—**Pierson Contg. Co.**, 220 Eddy Bldg., Saginaw, Mich., LB **$2,283,488**, 4.8 mi. section Detroit-Chicago Expressway from eastern terminus Jackson Northbelt easterly to Willis Rd., also four interchanges and grade sep. structures, Jackson Co. CD 8/11;

Mich.—**Raff & Dexter**, Box 9517, Cedar St. Annex, Lansing, Mich., LB **$915,205**, 0.3 mi. dual 36 ft. roadways and two grade seps. Grand Rapids X-way section from Fulton St. north to Bridge St., Grand Rapids, Kent Co. CD 8/11.

† **City of Cheboygan**, City Hall, Cheboygan, Mich., rejected bids Aug. 20, 363 cu. yd. common excav., 21,282 cu. yd. earthfill, etc. Little Black River, Cheboygan Co. for Soil Conservation Service, MICHIGAN. CD 7/27.

BUILDINGS—LB & CA

▲ **Halburton Constr. Co.**, 21303 Halburton Rd., Bedford, O. Own Forces, **$3,200,000**, 150 HOMES, Columbus Rd. to be known as Kimberly Estates, BEDFORD HEIGHTS, O.

Knowlton Constr. Co., Box 254, Bellefontaine, O., CA **$777,800**, NURSES DORMITORY, COLUMBUS, O. White Cross Hospital Assoc. of Ohio, 700 N. Park St., Columbus, O. Bids Aug. 6. CD 7/24.

A. B. Wenzler, 432 Lookout Ridge, Dayton, O., Owner Builds, **$500,000**, SHOPPING CENTER, northwest corner Marshall and Stroop Rds., DAYTON, O.

Schirmer-Peterson Co., 6830 Beaver Ave., Cleveland 4, O., CA **$669,700**, general contract, HIGH SCHOOL

(Continued on page 270)

Bowen Auto Park, Toledo, Ohio

★ Jennite J-16® ★ protects
Bowen Auto Park

At Bowen Auto Park, as at other leading parking areas, decks and ramps are protected with Jennite J-16 surface seal.

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MAINTENANCE INC. WOOSTER, OHIO
Distributors and Stocks in principal cities

After a late start

L-W 'Pulls* put job ahead of schedule

Working in one of 6 deep cuts, Dillard Construction's electric-control, 28-yd B Fullpak picks up heaping load of clay and sand rock. This 7.2-mi section will be part of the Ashville to Raleigh interstate highway.

Earthmoving was about 3 weeks behind schedule before W. B. Dillard Construction Co., of Sylva, North Carolina, could start work on its interstate route contract. To make matters worse, the project — 7.2 miles of interstate highway near Valdese, N.C. — was a rugged one, with 6 major cuts, one of them 95′ deep. In addition, the 500,000 yd of material to be moved was tough-loading clay and sand rock.

To beat such odds, this Dixie contractor made two smart moves. First, he added a pair of new LeTourneau-Westinghouse B Tournapulls® with 28-yd Fullpak® scrapers to his two 18-yd C 'Pulls. Second, he assigned an L-W Adams* Model 550 motor grader to keep haul roads on the job in high-speed condition. Here's how the L-W fleet performed:

Move 35,000 yd a week

Push loaded over 200′ by 190-hp crawler, the "B's" picked up an average of 20 pay yards per load, the "C's" 12 pay yards. Typical cycles of 2,700 ft were completed in less than 5 min. Working 11 hours a day, 6 days a week, the 2 B 'Pulls and 2 C 'Pulls together moved 140,000 yd in a one-month period, averaging 35,000 yd per week.

Dillard's Adams Model 550 grader insured steady scraper production by keeping haul roads smooth. Unit also cut ditches, sloped banks . . . handled all grader work on the job.

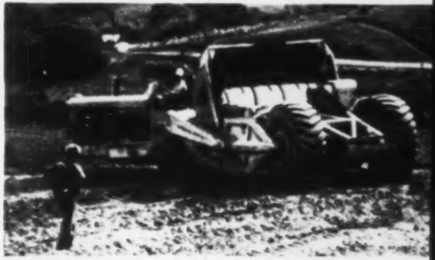
"Great speed and maneuverability"

Pleased with the progress of the job, general superintendent F. E. Stillwell, Sr. says, "These 'Pulls helped us catch up after the late start we had . . . we'll be ahead of schedule in short order. Tournapulls sure have great speed and maneuverability." Comments operator Carl McGaha, "Compared to other scrapers I used to run, this 'B' operates a lot easier . . . and it gets a good load every time."

Earn bigger profits

Let us show you how high-speed L-W Tournapulls with easy-loading Fullpak scrapers can put *your* job ahead of schedule . . . help you earn bigger profits. 335-hp "B", or 226-hp "C" available with torque converter or step-gear transmission, speeds up to 33.5 mph. Write for details and demonstration.

*Trademark BPCP-2007-DCJ-1



Here C Tournapull makes tight 180° turn as it completes spread. 'Pull's exceptional maneuverability helps cut cycle time . . . helps unit move more yards per hour.

Powerful L-W 550 grader slopes banks in a hurry. This 123-hp L-W grader is available with 15-speed transmission — lets operator match speed to load, apply more power to hard digging, travel fast job-to-job (25.2 mph). 145-hp POWER-Flow® 550 model has torque converter for maximum grader efficiency.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

(Continued from page 268)

ADDN., FAIRVIEW PARK, O. Fairview Park Bd Educ., 4507 W. 213th St., Cleveland, 26, O. Bids Sept. 1, awarded Sept. 4. CD 9/9; under LB.

Brown Constr. Co., 2116 Wales NE, Massillon, O. CA **$656,490, (7 bidders)**, general contract, HIGH SCHOOL, MASSILLON, O. Tuslaw Bd. Educ. Rd. No. 2, Massillon, O. Bids Aug. 28, awarded Sept. 2.

▲ **Hausman & Johnson, Inc.**, 28385 Holly Dr., North Olmsted, O., Own Forces, **$2,875,000**, 115 ranch HOMES, Olmsted Colony development, NORTH OLMSTED, O.

F. X. Minnigan Inc., 14 Bates St., Dayton, O., CA **$675,900**, WOMENS DORMITORY No. 3, OXFORD, O. Dpt. P. Wks., State Depts. Bldg., Columbus, O. Bids Aug. 4. Awarded Sept. 1. CD 8/12, under LB.

Knowlton; Inc., Box 254, Bellefontaine, O., CA **$958,500**, HIGH SCHOOL, WESTERVILLE, O. Bd. Educ., Westerville, O. Bids Sept. 1. CD 8/11.

Di-Noc Chemical Arts, Inc., 1700 London Rd., Cleveland 12, O., rejected bids to have been opened about Aug. 24, rein.-con., brick INDUSTRIAL FILM PLANT, WILLOUGHBY, O. **$600,000.** Syl Schmidt & Assocs., Engineers Bldg., St. Louis, Mo., archts. CD 7/9.

Mavec & Co., 26101 Euclid Ave., Cleveland 32, O., Own Forces, **$400,000**, 3 story, brick MEDICAL CENTER, opposite West Lake County Hospital, WILLOUGHBY, O. Grosel & Jensen, The Arcade, Cleveland 14, O., archts. CD 7/15.

▲ **Ben Rudick & Son, Inc.**, 266 Lincoln, Youngstown, O., CA Est. **$1,000,000**, twelve 2 story, 16-unit APARTMENTS, McCartney Rd. and Keystone Ave., YOUNGSTOWN, O. Kennedy's Park Terrace, Inc., c/o Leroy Kendis, 19501 N. Park, Cleveland, O. CD 2/19.

M. Berg & Son, 2142 S. 13th Ave., Broadview, Ill., CA **$140,000**, 75 x 141 ft. MEAT PACKING PLANT, 1218-32 W. Lake St., CHICAGO, ILL. Simco Meat Provision Co., 1053 W. Lake St., Chicago, Ill. R. H. Mayworm, c/o contractor, archt. Awarded Sept. 4.

▲ **John C. Long, Inc.**, 600 W. Jackson Blvd., Chicago 6, Ill., CA **$1,304,200**, FIREMAN'S ACADEMY, Jefferson St. and Taylor St., CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. **(Correction**—cost) CD 9/2, under CA.

T W Constr. Co., 1642 W. LeMoyne Ave., Chicago, Ill., CA **$300,000**, 2 story, 24,000 sq. ft., brick MFG. PLANT ALTERATIONS, ADDNS., CHICAGO, ILL. A. J. Nystrom & Co., 3333 N. Elston Ave., Chicago, Ill. Awarded Sept. 1. CD 5/20.

Charles Waterton, Inc., 2456 W. Irving Park Rd., Chicago, Ill., CA **$145,000**, POWER TOOLS FACTORY ADDN., CHICAGO, ILL. Skil Corp., 5033 N. Elston Ave., Chicago, Ill. Howard Snitoff, 343 S. Dearborn St., Chicago 4, Ill., archt. Awarded Sept. 4.

J. Emil Anderson & Sons, 1809 W. Balmoral Ave., Chicago, Ill., CA **$1,000,000**, design and construct 80,000 sq. ft. steel strapping FACTORY, 400 E. Toughy Ave., DES PLAINES, ILL. A. J. Gerrard & Co., 1950 Hawthorn Ave., Melrose Park, Ill.

Brighton Building & Maintenance Co., 3533 S. Archer Ave., Chicago, Ill., LB **$599,783**, HOSPITAL REHAB., sewerage, Oak Forest Hospital, 159th St. and Cicero Ave., OAK FOREST, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago, Ill. Bids Aug. 18. CD 11/12/48.

Earl Little & Son, Inc., 1210 Jackson St., Aurora, Ill. LB **$658,750**, 1 and part 2 story, 53,000 sq. ft. HIGH SCHOOL, PLANO, ILL. High School Dist. No. 25, High School Bldg., Plano, Ill. Bradley & Bradley, 924 Main St., Rockford, Ill., archts. Bids Sept. 2.

▲ **Linden & Sons Inc.**, 1102 10th St., Rockford, Ill., CA **$4,000,000**, 1 story FACTORY and OFFICE, Windsor Rd., ROCKFORD, ILL. Rockford Clutch Div. of Borg-Warner Corp., 200 S. Michigan Ave., Chicago, Ill. Awarded Aug. 14.

J. C. Basten Constr. Co., 1833 Morrow St., Green Bay, Wis., CA Est. **$350,000**, 1 story, 34,000 sq. ft., concrete, steel, brick, blocks SALES AND SERVICE, GREEN BAY, WIS., Brebner Machinery Co., Inc., 1744 S. Broadway, Green Bay, Wis. Bids July 28. CD 7/22.

Nelson & Co., Inc., 1550 Yout St., Racine, Wis., CA Est. **$345,000**, 2 story, 133 x 260 ft., concrete, steel, brick INDUSTRIAL PLANT, RACINE, WIS. Motor Specialty Co., 1319 18 St., Racine, Wis.

General Development Co., 943 S.W. 11¼ St., Rochester, Minn., CA **$605,690**, general contract SENIOR HIGH SCHOOL, STANLEY, WIS. Bd. Educ., Stanley, Wis. Bids Aug. 27. CD 9/2, under LB.

Thomsen-Abbott Constr. Co., Rothschild, Wis., CA **$479,475**, general contract GYMNASIUM and CAFETERIA addn. to Senior High School, WAUSAU, WIS. Bd. Educ., Wausau, Wis. Bids Aug. 25. CD 7/29.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

† **Arkansas and Missouri**—BA About 9/24—U. S. Eng., P. O. Box 867, Little Rock, Ark., bit. surf. access roads, Norfolk Reservoir, North Fork River, Baxter Co., Ark. and Ozark Co., Mo., CIVENG-03-050-60-16.

† **North Dakota**—BA 9/24—U. S. Eng., Riverdale, levees and appurtenant work, Lower Heart River Local Flood Protection Proj., Mandan, CIVENG-32-015-60-1. Extended date. CD 8/11.

† **Oklahoma**—BA 9/24—U. S. Eng., Box 61, Tulsa, drainage facilities, left abutment access road, ENG-34-066-60-21, Eufaula. $100,000. CD 9/19/58.

† **Oklahoma**—BA 9/24—Whitegrass-Waterhold, Water & Soil Conservancy Dist., 8½ N. Central, P. O. **Box 544, Idabel, Whitegrass-Waterhole Creek Watershed, sites Nos.** 2, 4, 5, 7 and 9, McCurtain Co. Plans deposit $10. CD 9/18/58.

† **Texas**—BA 9/25—U. S. Eng., 100 W. Vickery St., Fort Worth, cemetery removal and relocation at McGee Bend Reservoir near Jasper. CIVENG-41-443-60-6B. CD 9/19/58.

▲† **Minnesota**—BA 9/29—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Zone 1, Minn., Upper Lock, St. Anthony Falls, Mississippi River, Minneapolis. Inv. No. CIVENG-21-018-60-1. Plans deposit $100. Extended date. CD 8/13.

† **Arkansas**—BA 10/1—U. S. Eng., P.O. Box 60, Vicksburg, Miss., furnishing materials and equipment, 160,000 cu. yd. earthwork Round Lake and 84,000 cu. yd. earthwork Kimbrough on south bank of Arkansas River in Lincoln Co. CD 12/23/43.

† **Arkansas**—BA 10/8—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., pile dike Redman Point Arkansas (Mile 739 AHP), CIVENG-40-041-60-21. CD 12/23/43.

† **North Dakota**—BA On Or About 10/29—U. S. Eng., Riverdale, bank stabilization work, Buford-Trenton Irrigation Dist., Stage II, Schedule B.

† **Oklahoma**—BA 10/29—U. S. Eng., Box 61, Tulsa, spillway, Keystone Dam, ENG-34-066-60-22. $500,000. CD 9/19/58.

BUILDINGS—BA

Colo., Gunnison—BLDG. MODIFICATIONS—BA 9/24—State Planning Division, State Capitol, Denver, (Second Phase) modifications of bldg. equipment foundations, piping, elec. work distr. sys., coal silos, etc. for heating plant. $185,000. Stone & Birkle, 319 Midland Savings Bldg., Denver, engrs.

Iowa, Dubuque—SCHOOL—BA 9/22—Bd. Educ. Community School Dist., Washington Junior High, Jefferson Junior High, Irving Elementary Schools addns. Durrant & Bergequist, 666 Loras Blvd., archts. CD 2/11.

▲ **Minn., New Prague**—SCHOOL—BA 9/24—Bd. Educ., Independent School Dist. No. 721, school addn. $1,000,000. Extended date. H. H. Swanson, 500 Sexton Bldg., Minneapolis, archt. L. C. Gross, 507 Sexton Bldg., Minneapolis, consult. engr. CD 8/26.

Mo., Hannibal—HOSPITAL—BA 9/24—Levering Hospital, 5 story, 48 x 116 ft. hospital addn., remodeling. Hewitt & Royer, 607 Westport Rd., Kansas City, Mo., archts.

Mo., O'Fallon—SCHOOL—BA 9/29—Central School Dist. R-2 of St. Charles Co. Bd. Educ., 1 and 2 story, brick, masonry blocks, steel, concrete high school. $630,000. Charles W. Lorenz, 700 N. Ballas Rd., Kirkwood, Zone 22, archt. CD 9/10.

Tex., Fort Worth—HOSPITAL—BA 9/30—Fort Worth Children's Hospital Bldg., c/o J. Lee Johnson, 3rd, pres., 1 story, bsmnt., 45,000 sq. ft., brick, granite, pre-cast stone, rein. con. frame. Pruitt and 6th Ave. $600,000. Plans deposit $50. Preston M. Geren, 1607 Fort Worth National Bldg., Fort Worth, archt.

Mo., St. Louis County (St. Louis 21 P. O.)—CHURCH, etc.—BA 10/1—Our Lady of Loretto Catholic Parish and St. Louis Archdiocesan Bldg. Comn., 4396 Lindell Blvd., St. Louis 8, Mo., 1 story, 19,000 sq. ft. brick, concrete, etc. church and school, Redman Ave. near Bellefontaine Rd. Rime A. Dusard, 9215 Ladue Rd., Ladue 24, Mo., archt. CD 4/16.

Minn., Minneapolis—SCHOOL—BA 10/2—Bd. Educ., 807 Broadway N.E., Sanford Junior High School addn., 42nd Ave. S. and 36 St. $500,000. Extended date. Larson & McLaren, Foshay Tower, archts. CD 9/4.

† **Mo., Moberly**—POST OFFICE—BA 10/6—Public Bldgs. Service, General Services Admin., 2306 East Bannister Rd., Kansas City 10, Mo., 2 story, part bsmnt., rein.-con., structural steel framing, etc., post office, Johnson and Adams St., Appr. No. 47X1147, Proj. No. 23904. Plans deposit $50. CD 2/7/58, under Commercial Buildings.

† **Tex., Brownsville**—BORDER STATION—BA 10/15—General Services Admin., Design & Constr. Div., Room 101, 1114 Commerce St., Dallas, Zone 2, U. S. Border Station, Proj. DC 84-165-A. Plans deposit $25. CD 7/2, under LB.

BUILDINGS—SLC

Mo., Mehlville (St. Louis 25 P. O.)—CHURCH, etc.—St. Matthias Catholic Parish and St. Louis Archdiocesan Bldg. Comn., 4396 Lindell Blvd., St. Louis Zone 8, Mo., soon lets contract 1 and 2 story brick, steel, rein.-con. school and chapel, Buckley Rd. and Will Ave. Harry C. LePique, 4005 W. Florissant Ave., St. Louis 7, Mo., archt. CD 4/16.

Mo., St. Louis County—WAREHOUSE, etc.—L. E. F Corp., c/o Sommerich & Wood, archts., 8135 Forsyth Blvd., Clayton, Zone 24, soon lets contract 1 story 166 x 193 ft. warehouse and office mezzanine, 1480 Page Industrial Blvd., Page Industrial District. Neal J. Campbell, 911 Locust St., St. Louis, Zone 1, engr.

HEAVY CONSTRUCTION—LB & CA

Northwestern Bell Telephone Co., 5th St. and 2nd Ave. S., Minneapolis, Minn., Owner Builds, **$230,000**, install 23 mi. buried telephone cable between Luverne and Pipestone, MINNESOTA.

Megarry Bros., 437 33rd Ave. North, St. Cloud, Minn., LB **$90,743**, (2 bidders), bit. street surf. incl. curb and gutter, sidewalks, etc., BUFFALO, MINN. Village, Village Hall, Buffalo, Minn. Bids Aug. 31.

Dakota Co., Hastings, Minn., cancelled bids to have been opened Aug. 24, sand-grav. sub-base, grav. base and road mixed bit. base 3.1 mi. CSAH 11 from Jct. with CSAH 4 to Jct. with CSAH 1, 1.2 mi. west of Rosemount, HASTINGS, MINN. CD 8/5.

Lametti & Sons, 211 North Pascal St., St. Paul, Minn., LB **$129,921** (3 bidders), 18,000 lin. ft. 12 in. sanitary sewer extension, etc., MAPLEWOOD (P.O. ST. PAUL), MINN. Village, Village Hall, Maplewood, Minn. Bids Sept. 1. CD 8/12.

Clay Co., Moorhead, Minn., rejected bids Aug. 21, County State Aid Hy. 34, 8.415 mi. between Trunk Hy. 9 in village Felton and County State Aid Hy. 33, 2½ mi. west Village of Ulen. SAP 14-634-01, MOORHEAD, MINN, **$88,000.** CD 8/5.

Bianconi Constr. Co., 986 Bayard Ave., St. Paul, Minn., LB **$155,458**, (8 bidders), install water transmission lines, MOORHEAD, MINN. City, City Hall, Moorhead, Minn. Bids Aug. 26.

Northern Contg. Co., County Rd. 67, Hopkins, Minn., LB **$137,000**, (5 bidders), storm and sanitary sewers and water main, ST. LOUIS PARK, MINN. City, City Hall, St. Louis Park, Minn. Bids Sept. 4. CD 8/19.

† **Maple Valley Constr. Co.**, Battle Creek, Iowa, CA **$64,365**, 7 flood prevention structures on The Baker Subwatershed Little Sioux Basin, Monona Co., Inv. SCS-5-1A-60, IOWA, Soil Conservation Service, Federal Bldg., Sioux City, Iowa. Bids Aug. 25. CD 8/5.

Barbarosa & Sons. Inc. P. O. Box 599, St. Cloud, Minn. CA **$255,536**, est. over $60,000, WW sys. exten., incl. 30,206 lin. ft. 6- to 12-in. distr. lines, 38 gate valves and 48 manholes, 27,200 lb. special castings, etc., FORT DODGE, IOWA. City, City Hall, Fort Dodge, Iowa. Bids Aug. 4. CD 7/29.

Concrete Materials Co., 4096 First Ave., N.E., Cedar Rapids, Iowa, CA **$125,913**, b. conc. surf. streets, storm sewers in Div. I, MARSHALLTOWN, IOWA. City, City Hall, Marshalltown, Iowa. Bids Aug. 17. Lechner Engr. Co., Lechner Bldg., Ames, Iowa, engr.

Jackson Constr. Co., Nevada, Iowa, CA **$94,487**, 32,021 lin. ft., 30 in. c. conc. curb and gutters, storm sewers, various streets (Marshalltown, Iowa).

Stanfield-Pyland Constr. Co., 3707 Beaver Rd., Des Moines, Iowa, **CA $211,292**, sewerage sys., NORWALK, IOWA. Town, Town Hall, Norwalk, Iowa. Bids Aug. 3.

E. C. Henningson Co., Inc., Atlantic, Iowa, CA **$124,332** (4 bidders), asphaltic resurf. streets, RED OAK, IOWA. City, City Hall, Red Oak, Iowa. Bids Aug. 14.

Gjellefald Assoc., Inc., P. O. Box 111, Forest City, Iowa, LB **$146,816**, 14,785 lin. ft. 8 in. and 10 in. sanitary sewers, lift station and force main, etc., Contr. No. 125, WATERLOO, IOWA. City, City Hall, Waterloo, Iowa. Bids Sept. 1.

Allied Constr. Co., Inc., Charles City, Iowa, CA **$150,524**, street imprvs., Div. II, c. conc. paving, etc., WEST UNION, IOWA. City, City Hall, West Union, Iowa. Bids Aug. 10.

▲† **U. S. Eng.**, 1800 Federal Office Bldg., Kansas City 6, Mo., rejected bids June 16, Nike Hercules facilities, Whiteman Air Force Base. ENG-23-028-59-67. KNOB NOSTER, MO. LB **$1,853,050**. CD 6/26, under LB.

Maintenance Engineering Co. of St. Louis, 5216 Mackline Ave., St. Louis 9, Mo., LB **$89,372**, (5 bidders), imprv. section Market St. from Jefferson Ave. to point east of Leffingwell Ave. to straighten curve, ST. LOUIS, MO. Land Clearance & Housing Auth., 2031 Olive St., St. Louis 3, Mo. Bids Sept. 1.

▲† **Bushman Constr. Co.**, Box 713, Grand Island, Neb. LB **$1,539,106**, est. $1,965,577 (8 bidders) earthwork, structures incl. siphons for Culbertson Extension Canal, Station 1126 plus 00 to 1719 plus 00 and laterals, wasteways and drains, Culbertson, Hitchcock and Red Willow Counties, Missouri River Proj. Spec. DC 5221, NEBRASKA. Bureau Reclamation, Dpt. Interior, McCook, Neb. Bids Sept. 3. CD 7/30.

Crawford Electric Co., North Platte, Neb. CA **$97,647**, 6.02 mi. 69 KV transmission line, 1000 KVA substation Johnson Co. Proj. Neb. 44 Y Eastern Section 2B NEBRASKA. Eastern Nebraska Public Power Dist., Syracuse, Neb. C. H. Guernsey Co., 2701 N. Oklahoma St. and P.O. Box 3247, Oklahoma City, Okla., engr. CD 4/19/55.

Dugdale Constr. Co., 8611 Maple St., Omaha, Neb. CA **$229,937**. roads, street paving, curbing, guttering, grading, etc., OMAHA, NEB. Sanitary & Imprv. Dist. 20 of Douglas Co., c/o Henningson, Durham & Richardson Inc., engr., 2962 Harney St., Omaha 2, Neb. Bids Aug. 18. CD 8/5.

Collins Constr. Co., 940 Dakota St., Leavenworth, Kan., CA **$92,120**, grading, drainage, paving, etc. Proj. 1959-39, LEAVENWORTH, KAN. City, City Hall, Leavenworth, Kan. Bids Aug. 4.

Fairbanks Morse & Co., 902 Harney St., Omaha, Neb., CA **$353,900**, 2000 KW diesel engine generating unit, cooling tower, etc. for Municipal Power Plant, LINDSBORG, KAN. Municipal Power Plant, City Hall, Lindsborg, Kan. **(Correction**—Location). CD 8/28, under CA.

Pittsburgh-Des Moines Steel Co., 1015 Tuttle St., Des Moines, Iowa, CA **$82,300**, steel water tank and tower, etc., WAMEGO, KAN. City, City Hall, Wamego, Kan. Bids Aug. 25.

Garvin & Hurt Constr. Co., Box 867, Chickasha, Okla., CA **$60,212**, 3 floodwater retarding structures, Inv. L. B-P-3 Noble Co., OKLAHOMA. Noble County Soil Conservation Dist., 425 6th St., Perry, Okla. Bids Aug. 12. CD 8/4.

† **Gouker Bulldozer Service**, Box 476, Meeker, Okla. LB **$57,460**, (10 bidders) two floodwater retarding structures Sites Nos. 22 and 27, Sandy Creek Watershed Pontotoc and Garvin Counties, for Soil Conservation Service OKLAHOMA. Sandy Creek Water & Soil Conservancy Dist., 525 E. Main St., Ada, Okla. Bids Sept. 2. CD 8/12.

(Continued on page 272)

Drive 145,000 ft. of H-Beam Piles

40th YEAR
SPENCER, WHITE & PRENTIS

Owner: General Services Administration, Washington, D. C.
Architects: McKim, Mead & White, New York City
Consulting Engineers: Severud, Elstad & Krueger, New York City

Foundation for Smithsonian Institution's new addition marks first use of H-beam bearing piles for one of Washington's monumental buildings

The above-pictured H-beam foundation—largest in the nation's capital—is one of many installed by Spencer, White & Prentis in that city. The work awarded to us included the dewatering and excavation as well as the bearing piles—2,800 H-beams driven to a depth of 52 ft.

With penetration required through silt, gravel and decomposed rock, H-beams proved most economical and were selected over cast-in-place piles and pipe piles, both of which had also been specified.

Prior to excavation, 2 predrainage sumps lowered the ground water 21 ft. on the 300 x 600-ft. lot located near the Potomac River at the site of an old canal.

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(Continued from page 270)

Jess Whitlow, Ponca City, Okla., CA **$488,000,** 64 mi. small diam. pipe, crude gathering lines, Medford, Alfalfa-Grant Counties, OKLAHOMA. Mid-Continent Pipe Line Co., 907 Detroit, Tulsa, Okla. CD 9/4; **A. C. Holder Constr. Co.,** 2410 N. Lewis, Tulsa, Okla., CA **$360,000,** 36 mi. 6 in. main line, Medford (Oklahoma).

Atlas Development Co., 5100 E. 17th St., Tulsa, Okla. LB **$118,792,** est. $125,000, sanitary sewers and sewage disposal plant, COPAN, OKLA. Town, Town Hall, Copan, Okla. Bids Aug. 25. CD 8/19, under LB.

A&M Constr. Co., Box 329, Bryan, Tex. LB **$180,681** est. $110,000, (3 bidders) 80 mi. rural pole telephone lines, Proj. Tx-563-C-D and Tx-597 A-Kempner, Killeen, area, Bell, Williamson, Coryell and Lampasas Counties, TEXAS. Mid-State Telephone Co., Killeen, Tex. Bids Aug. 27. CD 8/24.

Coastal States Gas Producing Co., c/o Oil Industries Bldg., Corpus Christi, Tex., Owner Builds, **$185,000.** 25 mi. gas line, fields in Orange Grove to point 25 mi. west of Corpus Christi, TEXAS. CD 8/28.

▲† **Moorman & Singleton,** P. O. Box 216, Wills Point, Tex., CA **$2,830,339,** portions embankment and partial excavation of spillway, Waco Dam and Reservoir, Bosque River, ENG-41-443-60-2, TEXAS. U. S. Eng. 100 W. Vickery, Fort Worth, Tex. Bids Aug. 27. Awarded Sept. 3. CD 8/31, under LB.

▲† **Standard Dredging Corp.,** 520 Cotton Exchange Bldg., Galveston, Tex., CA **$1,531,200,** dredging Brownsville Channel, Brazos Island Harbor, Brownsville, Cameron Co., ENG-41-243-60-1, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Aug. 27. CD 7/30.

Swisher County Electric Co-operative, Tulia, Tex., Owner Builds, **$95,000,** KVA transmission electric lines, Tulia area, Swisher Co., TEXAS. CD 1/9/59.

Mixon Constr. Co. 305 Preston Royal Shopping Center, Dallas, Tex., CA **$96,000,** asphalt paved streets, etc. Northwood Hills Subdivision DALLAS, TEX. W. T. Troth, 4539 N. Central Expressway and Mixon Constr. Co., 305 Preston Royal Shopping Center, Dallas, Tex.

Mixon Constr. Co., 305 Preston Royal Shopping Center, Dallas, Tex., CA **$136 110,** sanitary-storm sewers, Northwood Hills Subdivision, DALLAS, TEX. W. T. Troth, 4539 N. Central Expressway, and Mixon Constr. Co., 305 Preston Royal Shopping Center, Dallas, Tex. CD 8/28.

Mixon Constr. Co., 305 Preston Royal Shopping Center, Dallas, Tex., CA **$57,500** water lines, Northwood Hills Subdivision DALLAS, TEX. W. T. Troth, 4539 N. Central Expressway and Mixon Constr. Co., 305 Preston Royal Shopping Center, Dallas, Tex.

Mixon Constr. Co., 305 Preston Royal Shopping Center Dallas, Tex. CA **$62,000,** area site earthwork Northwood Hills Subdivision DALLAS, TEX. W. T. Troth, 4339 N. Central Expressway and Mixon Constr. Co., 305 Preston Royal Shopping Center, Dallas, Tex.

Gower & Folsom Constr. Co., 8806 Sovereign Row, Dallas, Tex., CA Est. **$60,000,** earth site development for shopping center, FARMERS BRANCH, TEX. Farmers Branch Shopping Center, W. L. Earhart & Assocs., 4519 San Gabriel, Dallas, Tex.

Gower & Folsom Constr. Co., 8806 Sovereign Row, Dallas, Tex., CA Est. **$100,000,** hard paved area and paved auto center, FARMERS BRANCH, TEX. Farmers Branch Shopping Center, W. L. Earhart & Assocs., 4519 San Gabriel, Dallas, Tex.

Walter M. Mischer Co., 705 Holmes Rd., Houston, Tex. CA **$62,500.** water lines, Memorial Hollow Subdivision HOUSTON, TEX. Memorial Hollow Corp., 2406 Derrington St., Houston, Tex.

Walter M. Mischer Co., 705 Holmes Rd., Houston, Tex. CA **$65,000.** earth site work, Memorial Hollow Subdivision, HOUSTON, TEX. Memorial Hollow Corp., 2406 Derrington St., Houston, Tex.

Walter M. Mischer Co., 705 Holmes Rd., Houston, Tex. CA **$107,190.** concrete paved streets, etc. Memorial Hollow Subdivision, HOUSTON, TEX. Memorial Hollow Corp., 2406 Derrington St., Houston, Tex. CD 8/31.

Walter M. Mischer Co., 705 Holmes Rd., Houston, Tex., CA **$96,220,** sanitary sewers; CA **$89,000** storm sewers Memorial Hollow Subdivision, HOUSTON, TEX. Memorial Hollow Corp., c/o Jos. J. Johnson, pres., 2406 Derrington St., Houston, Tex. CD 8/31.

Port Comn., Navigation Dist., Wharf 13 or 1519 Capitol Ave., Houston, Tex., rejected bids Sept. 2 repair and maintenance shops, HOUSTON, TEX. CD 8/17.

City, City Hall, La Pryor, Tex., Own Forces **$62,500** water sys. rehabilitation, LA PRYOR, TEX.

City, City Hall, Laredo, Tex., Owner Builds, **$95,500** street reworking, repairing, drainage, LAREDO, TEX. CD 7/7/58.

City, City Hall, Llano, Tex., Own Forces, **$60,000,** Phase 1, water storage steel standpipe; **$58,000,** Phase 2, water lines repairing, replacing exten., LLANO, TEX. CD 4/27.

City, City Hall, Snyder, Tex., Own Forces, **$60,000** water plant expan.; **$55,000,** c.i. water mains, SNYDER, TEX. CD 11/18.

City, City Hall, Sweetwater, Tex., Owner Builds **$60,000,** replacing water distr. lines, SWEETWATER, TEX. CD 10/7/58.

City, City Hall, Sweetwater, Tex., Owner Builds, **$80,000,** sanitary sewers, SWEETWATER, TEX. CD 10/7/58.

City, City Hall, Texarkana, Tex., Owner Builds, **$125,000,** street imprvs., surf., TEXARKANA, TEX. CD 7/19/56.

City, City Hall, Texarkana, Tex., Owner Builds, **$100,000,** open drainage TEXARKANA, TEX.

Smith County, Courthouse, Tyler, Tex., Owner Builds, **$100,000,** county road repairing, reworking, TYLER, TEX. CD 6/16.

Lake Air Development Co., c/o Arthur Temple, Jr., Builder, Diboll, Tex. and Chas. L. Sligh, Developer, Waco, Tex., Owner Builds, **$98,500,** asphalt paved streets, curbs and gutters, 243 acre tract N.W. Waco Section, WACO, TEX. CD 8/28.

† **U. S. Eng.,** Box 1600 Fort Worth, Tex., cancelled bids to have been opened Aug. 20, runway lighting, Connally Air Force Base, ENG-41-443-60-1, WACO, TEX. CD 7/22.

† **Utility Service Co.,** Cody, Wyo., LB **$148,782,** water and sewerage systems and road to serve future housing Mammoth Hot Springs, Yellowstone National Park, WYOMING. National Park Service, Admin. Bldg., Mammoth Hot Springs, Yellowstone Park, Wyo. Bids Aug. 25. CD 8/11;
Reed Nielsen, St. Anthony, Idaho, LB **$108,987,** wash house YEL-W 226, Yellowstone National Park (Wyoming).

† **COLORADO**—Bureau P. Rds., Dpt. Commerce, Denver Federal Center, Denver, Zone 25. Bids opened 9/2.
Western Paving Constr. Co., 5105 North Washington St., Denver, Colo., LB **$278,830,** est. $369,205 (8 bidders), 22.289 mi. Forest Hy. Proj. 54-A4, B4, C4, E4, Mount Evans, and 55-A4, Echo Lake, Idaho Springs, Clear Creek Co. CD 8/24.

BUILDINGS—LB & CA

R. A. Shelgren, 324 First Federal Bldg., St. Paul, Minn., CA **$110,000,** general contract 1 story, 80x193 ft. WAREHOUSE, 80-2nd Ave., ST. PAUL, MINN. Northwest Publications, 55 East Fourth St., St. Paul, Minn.

T. E. Ibberson Co., Hamilton and Wooddale Aves., Minneapolis, Minn., CA 112,000 bu. GRAIN ELEVATOR ARMSTRONG, IOWA. Quaker Oats Elevator Co., Armstrong, Iowa.

Mill & Elevator Co., 4207 2 St., Des Moines, Iowa, CA **$155,286,** push-button type feed mixing and food pellet PLANT, ROCK RAPIDS, IOWA. Farmers Cooperative Exchange, Rock Rapids, Iowa.

Risvan, Inc., Sanborn, Iowa, Owner Builds, **$150,000,** FERTILIZER MFG. PLANT, SANBORN, IOWA.

Spencer Constr. Co., Spencer, Iowa, CA **$341,635** (3 bidders), 1 story, bsmnt. PACKING PLANT addn.

(Continued on page 274)

ALL THIS
100% DUTY CYCLE
225 Amperes Rated Output
5 KW 115/230v AC
1 KW 115v DC
12.9 HP ONAN ENGINE
AND NOW
ELECTRIC STARTER
miller

The world-wide respect and demand for this original Miller gas engine driven welder/power plant has never been greater. To this established popularity has now been added the convenience of Bendix drive electric starting as optional equipment on models AEA-200-L and AEA-200. Model illustrated and headlined is AEA-200-LE.

As a welder, as a power plant, as a pipe thawer, indeed, as a top hand from Canadian uranium mines to Brazilian cattle ranches — and on highway construction jobs and repair ships between — the AEA-200-L stands quite alone as "the finest in the field." In addition to optional electric starter, road trailers and rubber tired running gear are also available.

Other Miller gas engine driven DC and AC-DC welder/power plants to 300 amperes at 100% duty cycle. Full particulars will be sent promptly upon request, or a demonstration can be arranged at your convenience.

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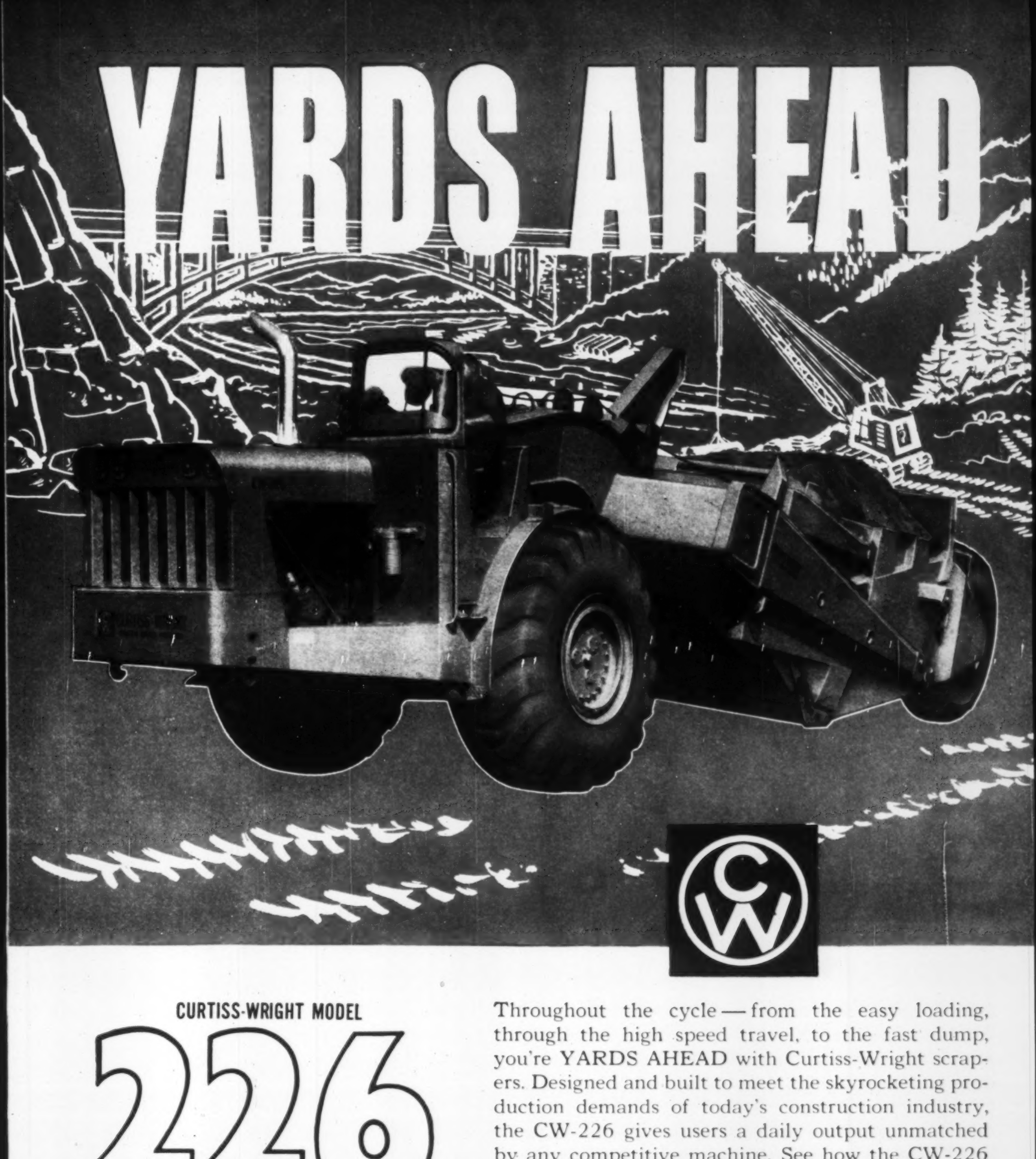

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226

CW-226 SELF-PROPELLED SCRAPER

Capacities: 26 cu. yds. struck, 36 cu. yds. heaped, 78,000 pound rated load

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Throughout the cycle — from the easy loading, through the high speed travel, to the fast dump, you're YARDS AHEAD with Curtiss-Wright scrapers. Designed and built to meet the skyrocketing production demands of today's construction industry, the CW-226 gives users a daily output unmatched by any competitive machine. See how the CW-226 can give your job a production boost — Let your C-W distributor give you complete details on the "Yards Ahead" features of the Curtiss-Wright line.

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SOUTH BEND DIVISION
CURTISS-WRIGHT
CORPORATION
SOUTH BEND, INDIANA

CIRCLE 273 READER SERVICE CARD

(Continued from page 272)

SPENCER, IOWA. Spencer Packing Co., Spencer, Iowa. Bids July 31.

Frank Friemel Realty Co., Inc., 4540 Gravois Ave., St Louis 16, Mo., Separate Contracts, Over **$400,000,** HOMES, incl. streets, sewers etc. Lake Lorraine Subdivision Hy. 21 south Hy. 141, HILLSBORO, MO.

Kirkwood School Dist. R-7, Bd. Dirs., 516 S. Kirkwood Rd., Kirkwood 22, Mo., rejected bids Aug. 20, 1 story, 90x197 ft. and 1 story, 32x181 ft. North Kirkwood JUNIOR HIGH SCHOOL addns. and alternate A1, 52x72 ft. shop and boiler, KIRKWOOD (ST. LOUIS 22 P.O.), MO. CD 8/11.

Bramer Constr. Co., 1701 W. Walnut St., Springfield, Mo., CA **$160,100,** brick, concrete, etc. WAREHOUSE and OFFICE, SPRINGFIELD, MO. Ozark Motors and Ozark Tractors Benton and Tampa Sts., Springfield, Mo. A. C. Esterly, McDaniel Bldg., Springfield, Mo., archt.

▲ **Robert Paulus Constr. Co.**, 3441 Morganford Rd., St Louis 16, Mo., CA **$4,291,600,** 3 story bsmnt., brick, concrete masonry steel etc. CLINIC and ADMINISTRATION BLDG. St. Louis State Hospital, 5400 Arsenal St., ST. LOUIS, MO. St. Louis State Hospital, 5400 Arsenal St., St. Louis 9, Mo., and State of Missouri Planning & Constr. Office, 100 State Capitol, Jefferson City, Mo. Bids Aug. 25. CD 8/28, under LB.

F. P. Gehring, 522 Woodlawn, Atchison, Kan., LB **$469,000,** est. $400,000 (4 bidders), 1 story 64x155 ft. RUSHVILLE ELEMENTARY SCHOOL and 1 story, part 2nd story L-shaped 60x100, 78x120 ft. DeKalb HIGH SCHOOL addn., RUSHVILLE and DEKALB, MO. School Dist. R-4, Buchanan Co., DeKalb, Mo. Frangkiser & Hutchens, 7926 State Line, Kansas City, Mo., archts. Bids Aug. 18.

R. W. Hughes Co., 405 Sunderland Bldg., Omaha, Neb., LB **$113,539 (A)** POWER GENERATING PLANT addn., bldg. alterations and exten., generating unit, cooling sys., switchboard alterations, EMERSON, NEB. City, City Hall, Emerson, Neb. Bids Aug. 31. CD 8/28.

Johnson Constr. Co., 1200 Park St., Salina, Kan., CA est. **$163,000,** 280,000 bu. GRAIN STORAGE ELEVATOR, ATLANTA, KAN. Atlanta Cooperative Elevator Assn., Atlanta, Kan.

L. R. Foy Constr. Co., 417 N. Main St., Hutchinson, Kan., CA Est. **$750,000,** 24-lane, 141x145 ft. BOWLING ALLEY, parking area, 30th St. and Lorraine Ave., HUTCHINSON, KAN. Hutchinson Bowling Alleys, Inc., c/o Miller, Hiett, Hockett, Dronberger &

Swenson Constr. Co., 3305 Terrace, Kansas City, Mo., LB **$492,998** (9 bidders), 3 story, part bsmnt., 45x142 ft. air-conditioned COMMUNICABLE DISEASE CENTER for Medical Center, KANSAS CITY, KAN. University of Kansas, 39 and Rainbow Blvd., Kansas City, Kan. Charles L. Marshall, 110 Taylor, Topeka, Kan., archt. Bids Aug. 18. CD 4/16.

▲ **Humble Oil & Refining Co.**, Baytown, Tex., Owner Builds, **$1,250,000,** PHENOL PLANT UNIT, BAYTOWN, TEX. CD 8/28/58.

Centex Constr. Co., 4606 Greenville St., Dallas, Tex., Owner Builds, **$450,000,** PARKING GARAGE, BEAUMONT, TEX. CD 8/4.

Spaw-Glass Inc., Box 25025, Houston, Tex., CA **$622,500** (8 bidders), student MEN'S DORMITORY, BEAUMONT, TEX. Lamar State College of Technology, Beaumont, Tex. Pitts, Mebane & Phelps, 1872 Calder Ave., Beaumont, Tex., archts.-engrs. Bids Aug. 27. CD 4/4/57.

▲ **Del Sasso Land Development Co.**, c/o Dr. E. C. Scofield, Bridge City, Tex., Owner Builds, **$441,750,** 33 DWELLINGS; **$438,700,** 31 DWELLINGS; **$431,125,** 29 DWELLINGS, 232 acre tract BRIDGE CITY, TEX. Grand total $1,311,575. CD 7/28.

Southwest Constr. Co., 8635 Sceyne Rd., Dallas, Tex., CA **$408,532.** Base Bid, 40,000 sq. ft. face brick steel frame ELEMENTARY SCHOOL, CARROLLTON, TEX. Carrollton Ind. School Dist., Carrollton, Tex. Bids Aug. 27. CD 8/20.

Crossen Constr. Co., Inc., 6818 Twin Hills, Dallas, Tex. Owner Builds, **$431,000,** 28 DWELLINGS; **$409,150,** 23 DWELLINGS, Estates Home Subdivision, DALLAS, TEX. CD 9/1.

Lee Constr. Co., 6516 Kingsbury St., Dallas, Tex. Owner Builds, **$412,450** 22 brick DWELLINGS, Richardson Heights, DALLAS, TEX. CD 8/27.

V. B. Millins, Builder, 3206 Cliff Oak St., Dallas, Tex. Force-Account, **$410,500,** 16 DWELLINGS, Wynnewood Hills Subdivision, DALLAS, TEX. CD 8/28.

Smith-Gaul, Inc., Contractors, 1026 Whitestone St., Dallas, Tex., Owner Builds, **$415,000,** 15 DWELLINGS, Oak Bluff Suburb, DALLAS, TEX. CD 8/28.

▲ **Gower & Folsom Constr. Co.**, 8806 Sovereign Row, Dallas, Tex., CA Est. **$775,000,** SHOPPING CENTER Unit 3. CA **$410,000,** 40,000 sq. ft. masonry SHOPPING CENTER Unit 2, FARMERS BRANCH, TEX. Farmers Branch Shopping Center, Farmers Branch, Tex. CD 4/27.

W. A. W. Builders, Inc., 525 N. 5th St., Garland, Tex., Owner Builds, **$415,000,** 27 DWELLINGS, off Forest Lane, GARLAND, TEX. CD 8/28.

▲ **W. Edward Brown, Developer-Builder,** 2300 Sakowitz St., Houston, Tex., Purchase and Hire, **$434,500,** 37 DWELLINGS; **$416,450,** 44 DWELLINGS, **$404,675,** 32 DWELLINGS, Hiram Clark Rd. area, HOUSTON, TEX. Grand total $1,255,625. CD 8/6.

King & Sheets Corp., 5111 Buffalo Speedway, Houston, Tex., Owner Builds, **$490,750,** 25 DWELLINGS; **$465,000,** 28 DWELLINGS, Tanglewilde Addn., HOUSTON, TEX. CD 8/7.

Paul J. McConnell, Builder, 6159 Longmont St. (office No. 1), Houston, Tex. Owner Builds. **$455,000,** 15 DWELLINGS adjacent to Tanglewood Subdivision, Arckbuckle, archts., 825 N. Main St., Hutchinson, Kan. HOUSTON, TEX. CD 8/31.

▲ **Northwest Builders, Inc.**, 6903 Inkberry Street, Houston, Tex., Owner Builds, **$443,175,** 32 DWELLINGS; **$436,000,** 30 DWELLINGS; **$428,150,** 28 DWELLINGS, Exten. Cole Creek Manor Subdivision, HOUSTON, TEX. Grand total $1,307,325. CD 7/16.

▲ **Leo E. O'Neal Interests,** 3908 Main St., Houston, Tex., Owner Builds, **$475,000,** 19 DWELLINGS; **$431,000,** 27 DWELLINGS; **$421,125,** 24 DWELLINGS, Braeburn Subdivision, HOUSTON, TEX. Grand total $1,327,125. CD 8/10.

▲ **Rozelle Constr. Co.**, c/o Wm. Rozelle, Jr., 4034 Grapevine Rd., Houston, Tex., Owner Builds, **$441,700,** 31 DWELLINGS; **$436,300,** 24 DWELLINGS; **$412,625,** 28 DWELLINGS, Woodforest Subdivision, HOUSTON, TEX. Grand total $1,290,625. CD 7/16.

▲ **Straus-Frank Co. & Sam P. Wallace & Co.**, Box 6065, Dallas, Tex., CA Est. **$4,000,000,** air-conditioning and plumbing for BANK-OFFICE, HOUSTON, TEX. First City National Bank, 921 Main St., Houston, Tex. CD 9/29/58.

▲ **Suburban Homes Realty & Lumber Co.**, 901 Little York Rd., Houston, Tex., Purchase and Hire, **$474,600,** 28 DWELLINGS **$424,000,** 40 DWELLINGS, "Fontaine" Pl., **$419,500,** 34 DWELLINGS, **$408,500,** 43 DWELLINGS "Chatwood" Pl., HOUSTON, TEX. Grand total $1,726,600. CD 7/16.

L. A. Denton, Contractor, 8502 Sagebrush St., San Antonio, Tex., CA **$510,000,** APARTMENT, 8½ acre tract, Wurzbach Hy., SAN ANTONIO, TEX. L. A. Denton & Guy Chipman, Jr., 4412 Broadway Ave., San Antonio, Tex. CD 8/21.

Ray Ellison, Builder-Developer, Hy. 90 West, San Antonio, Tex., Owner Builds, **$418,500,** 32 DWELLINGS, **$408,175,** 42 DWELLINGS, "Lackland City", SAN ANTONIO, TEX. CD 7/29.

G. E. Kinder, Contractor and Kinder Bros. Lumber & Supply Co., 747 W. Sunset Rd., San Antonio, Tex., Owner Builds, **$416,100,** 43 DWELLINGS, **$407,000,** 39 DWELLINGS, Alamo Heights Gardens, SAN ANTONIO, TEX. CD 8/28.

Edgar Von Scheele & Co., Contractors, 4418 Newcome St., San Antonio, Tex., Owner Builds, **$417,100;** 28 DWELLINGS, **$412,300,** 31 DWELLINGS, Glen Oaks Park off Babcock Rd., SAN ANTONIO, TEX. CD 8/27.

Hardy Constr. Co., 420 N. 25th St., Billings, Mont. CA **$702,400,** general constr. 5 story, 44x144 ft., rein.-con. frame 75 bed Deaconess HOSPITAL addn., BILLINGS, MONT. Deaconess Hospital, 2813 9th Ave. N., Billings, Mont. Bids Sept. 3. CD 8/20.

Jewish Community Center, 1475 Williams, Denver, Colo., cancelled bids to have been opened Aug. 19, site preparation for recreation facilities E. Alameda Ave. and Dahlia, DENVER, COLO. CD 8/17.

Frank Tatsch, 1150 Main St., Silver City, N. M., CA **$526,757** (3 bidders), HIGH SCHOOL, PORTALES, N. M. Portales Municipal School Dist. No. 1, Portales, N. M. Bids Aug. 18. Schaefer, Merrill & Pendleton, Clovis, N. M., archts.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., Los Angeles—BA 9/29—Board Regents, Univ. of Calif., 405 Hilgarde St., Los Angeles, paving and grading parking lot at Sub-Tropical Horticulture site, $125,000. Plans deposit $50.

Calif., Santa Ana—BA 10/7—Orange County, Courthouse East Garden Grove-Wintersburg channel from Tidelands to Huntington Beach Blvd. and Ocean View Channel, Garden Grove $500,000. CD 4/11/57.

† **California**—COMFORT STATIONS—BA 10/8—National Park Service, Dpt. Interior, Sequoia and Kings Canyon National Parks, Three Rivers, comfort stations Sequoia and Kings Canyon National Parks, Proj. SK-W-234. Extended date. CD 9/1.

† **Utah**—BA 10/8—Bureau Reclamation, Dpt. Interior, Ogden, earthwork, pipe lines, structures for Woods Cross lateral system, Part 1, Weber Basin Project, DC-5235. CD 9/30/58.

† **Washington**—BA 10/13—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing; del. f.o.b. cars or trucks Sched. 1, Item 1, 52 cu. ft. per second capacity pumping unit; Sched. 2, Item 2, two 24 cu. ft. per second capacity pumping units; Sched. 2, Item 3, 12 cu. ft. per second capacity pumping unit, for Frenchman Hills and Hope Valley Pumping Plants, Columbia Basin Proj., Othello, DS-5236. CD 9/10/56.

† **Calif., Point Arena**—WATER SUPPLY—BA About 10/14—U. S. Eng., 180 New Montgomery St., San Francisco, water supply, Phase II, Point Arena Air Force Station. ENG-04-203-60-11.

† **Calif., Point Arena**—GATR FACILITIES—BA About 10/15—U. S. Eng., 180 New Montgomery St., San Francisco, Zone 5, GATR Facilities, Point Arena Air Force Station. ENG-04-203-60-12. CD 7/2.

▲† **Calif., Travis Air Force Base**—BOMARC FACILITY—BA About 10/15—U. S. Eng., 180 New Montgomery St., San Francisco, Zone 5, twenty-eight 1,400 sq. ft. launcher shelters, 740 sq. ft. ordnance storage building, 26,200 sq. ft. composite bldg., 2,660 sq. ft. fire station bldg., 150,000 gal. elevated water storage tank, pumping station, interior electric, plumbing, heating and mechanical sys. for building; exterior utilities. ENG-04-203-60-10. CD 4/24.

† **Oregon**—BA 10/15—U. S. Eng., Pittock Block, Portland, security bldg., fencing, Big Eddy garage alterations, The Dalles Dam. CD 9/19.

▲ **Calif., Los Angeles**—BA 10/16—Los Angeles County Flood Control Dist., 12250 Alcazar St., 1st unit, 27 ft. x 87 ft., concrete pile fdn., pumping station, Dominguez Gap Spreading Grounds, incl. earthwork, temporary drain and provisions for water control. $1,331,690. CD 1/25/57.

† **Washington**—BA 10/20—U. S. Eng., City-County Airport, Walla Walla, grading relocation UP RR, Section II road, Ice Harbor Lock and Dam, CIVENG-45-164-60-5.

† **Arizona**—BA 11/10—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., eight 155,500 hp. 150 rpm vertical shaft hydraulic turbines for Glen Canyon Powerplant, Colorado River Storage Proj., Spec. DS 5234. CD 9/16/57.

BUILDINGS—BA

Calif., Spadra—HOSPITAL ALTERATIONS—BA 9/30—State Div. Architecture, 1100 S. Spring St., Los Angeles, remodeling laundry, Pacific State Hospital, Spadra, W.O. 4164GC-19. $147,500.

▲ **Calif., Long Beach**—OSTEOPATHIC HOSPITAL—BA 10/15—City, City Hall, Osteopathic Hospital $1,160,223. CD 5/15/56.

HEAVY CONSTRUCTION—LB & CA

† **Boyles Bros., Drilling Co.,** 1321 S. Main St., Salt Lake City, Utah., LB **$56,369,** est. $79,134 (7 bidders), exploratory drilling for Bruces Eddy dam on north fork of Clearwater River, CIVENG-45-164-60-4, IDAHO. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Sept. 2. CD 8/12.

† **UTAH**—Bureau P. Rds., Room 202, 1750 Redwood Rd., Salt Lake City, Bids opened 9/1,

Fife Constr. Co., Box 563, Brigham City, Utah, LB **$375,775,** grading, draining, bit. surf. 4.579 mi. Forest Hy. Proj. 7-E Fairview-Huntington, Emery Co. CD 8/21.

† **L. A. Landscaping Co.,** 1233 Highland Lake Drive, Salt Lake City, Utah, CA **$68,736** landscaping and soil stabilization incl. furnishing and installing sprinkling systems Colorado River Storage Project, Glen Canyon Unit, 400C-140 ARIZONA, Bureau Reclamation, Dpt. Interior, Page, Ariz. Bids Aug. 5. CD 8/3.

† **D. W. Falls, Inc.**, P. O. Box 95, Albuquerque, N. M. LB **$71,620** est. $90,000, (16 bidders), water system imprvs., SAN CARLOS, ARIZ. Bureau Indian Affairs, Dpt. Interior, P. O. Box 1777, Albuquerque, N. M.

† **Flora Constr. Co.**, 3800 Dahlia St., Denver, Colo. CA **238,000,** FD radar tower, FPS-26, Las Vegas Air Force Station, ENG-04-203-60-4, LAS VEGAS, NEV. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Aug. 18. CD 7/16.

WASHINGTON—State Hy. Comn., Dpt. Hys., Olympia, Bids opened 9/1,

Bass Constr. Co., 12526 Aurora St., Seattle, Wash., LB **$312,228,** est. $270,000, (6 bidders), draining, grading, surf., constr. bit. surf. treatment, b. conc. paving and constr. precast concrete bridge on 5.504 mi. 284 Ave. S. E. and Krain-Veazie Rd., FAS Nos. S-0927 (1) and S-0919(2), King Co. CD 8/17.

▲† **Peter Kiewit Sons Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb., LB **$3,617,925,** est. $4,533,**923,** (18 bidders), relocation of railroad for Ice Harbor Dam, Walla Walla Co., CIVENG-45-164-59-57. WASHINGTON, U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Sept. 2. CD 8/17.

† **Quigg Bros-McDonald, Inc.,** 1500 Riverside St., Hoquiam, Wash., LB **$66,835,** est. $76,140, (2 bidders), modify breakwater C at Westhaven Cove, Grays Harbor and Chehalis River, involving 4,200 tons gravel bedding, quarry spalls and riprap, CIVENG-45-108-60-5, WASHINGTON, U. S. Eng., 1519 S. Alaskan Way, Seattle 4 Wash. Bids Sept. 1. CD 8/13.

† **Midland Drilling Co. and R. Strasser Drilling Co.**, P. O. Box 637, Walla Walla, Wash., LB **$108,850,** est. $97,928, (1 bidder), Schedule A, drill, case develop and test water wells at Ruff, near here, ENG-45-164-60-3, MOSES LAKE, WASH., U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Sept. 1. CD 8/12.

E. A. Holman & Sons, E. 3410 9 Ave., Spokane, Wash., LB **$111,193,** est. $135,739, (2 bidders), Schedule B, drill case, develop and test water well at Warden, near here, (Moses Lake, Wash.) received no bids Sept. 1, Schedule C, drill, case, develop and test water well at Beverly, near here (Moses Lake, Wash.).

† **OREGON**—Bureau P. Rds., Morgan Bldg., Portland, Bids opened 9/2,

Frank G. Baulne, Inc., Box 84, Yardley, Wash., LB **$311,975,** est. $352,890 (12 bidders), grading 5.484 mi., surf. 10.952 mi. Cascade Lakes Hy., Dechutes Co. CD 8/18.

† **OREGON**—Bureau P. Rds., 720 SW Washington St., Portland, Bids opened 9/3,

Peter Kiewit Sons Co., 405 E. Main St., Medford, Ore. LB **$295,434** (22 bidders), grading 4.464 mi. Lake of the Woods Rd., Jackson Co. CD 8/21.

† **Broderick & Collins,** P. O. Box 384, Lakeview, Ore. LB **$79,000,** clearing Prineville Reservoir site, about 13 mi. southeast of Prineville, Crook Co., Spec. 100C-377, OREGON. Bureau Reclamation, Dpt. Interior, Prineville, Ore. Bids Aug. 20. CD 7/30.

L. D. Shilling Co., Box 1637, Moses Lake, Wash., LB **$148,927** (11 bidders), water storage dam, north fork of Rock Creek, CORVALLIS, ORE. City, City Hall, Corvallis, Ore. Bids Aug. 28. CD 8/19.

(Continued on page 276)

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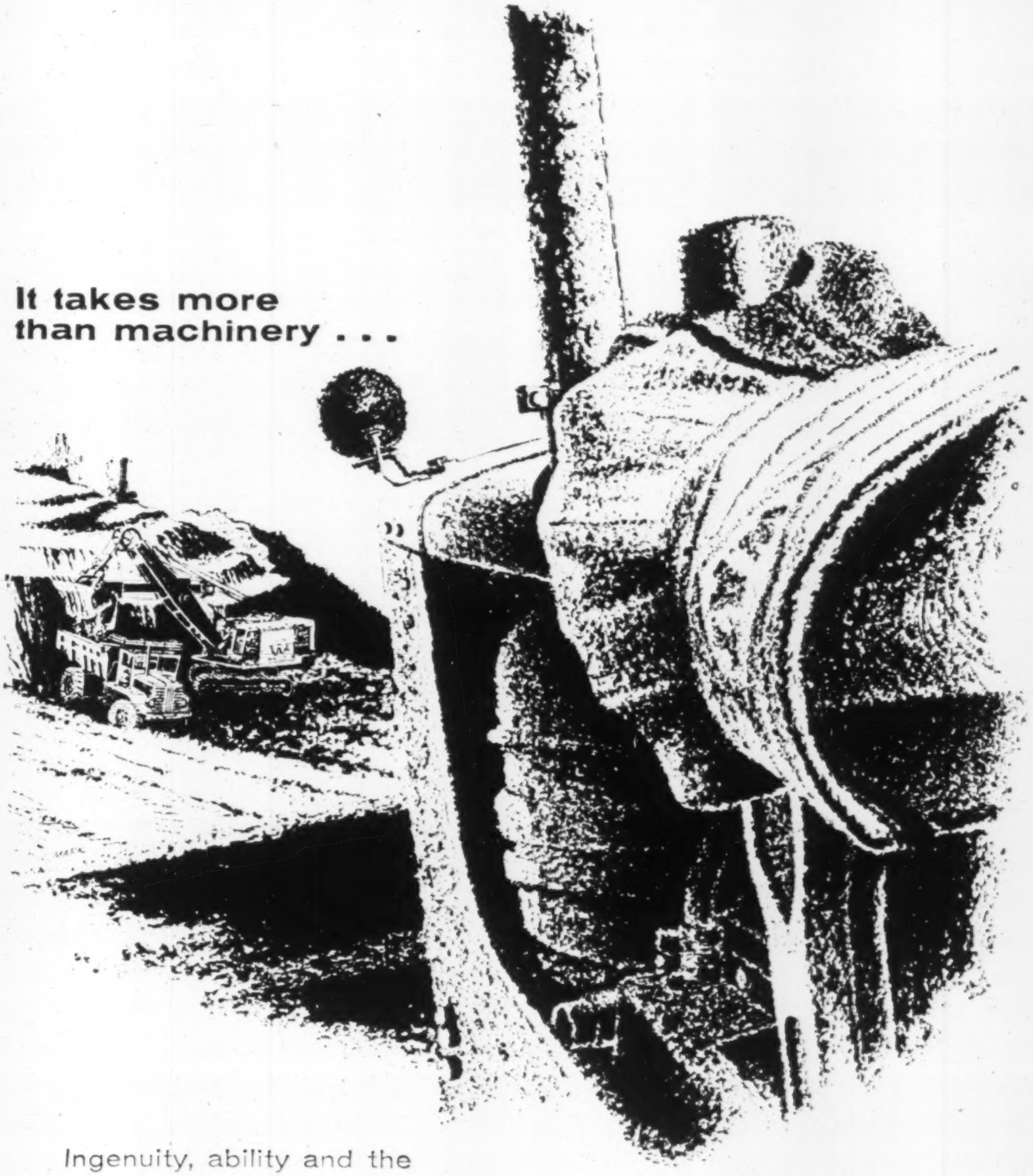

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CIRCLE 275 READER SERVICE CARD

(Continued from page 274)

Contractors, Inc., 1101 NE 21st Ave., Portland, Ore., LB **$117,844** (10 bidders), 2,900,000 gal. concrete water reservoir, Marquam Hill, PORTLAND, ORE. City, City Hall, Portland, Ore. Bids Sept. 1. CD 8/11.

† **CALIFORNIA**—Bureau P. Roads, New Mint Bldg., San Francisco, Bids opened 8/27,

Clyde W. Woods & Sons, P. O. Box 620, North Hollywood, Calif., LB **$474,154** (10 bidders), grading, drainage, bridge at Beach Meadows, Sequoia National Forest, Tulare Co. CD 8/13.

† **R. W. Byers Co.**, P. O. Box 67, Redding, Calif., LB **$511,100** (6 bidders), reservoir site clearing at Trinity Reservoir Site, Spec. No. 200C-419A, CALIFORNIA. Bureau Reclamation, P. O. Box 247, Lewiston, Calif. Bids Aug. 27. CD 8/14.

† **Elmer G. Wendt**, 35 N. Front St., Rio Vista, Calif., CA **$261,624**, bank protection levee, Sacramento River, right bank Three Mile Slough, Sacramento and Yolo Counties, Spec. 2601, ENG-04-167-60-8, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids Aug. 20. CD 7/15.

† **Baldwin Contg. Co.**, 9th and Yuba Sts., Marysville, Calif., LB **$171,552**, est. $178,959 (6 bidders), Sched. A, LB **$339,590**, est. $355,285 (5 bidders), Sched. C, transmitter-receiver (SAGE) facilities, Spec. 2582 and 2583, ENG-04-167-60-4, BEALE AIR FORCE BASE, and RED BLUFF AIR FORCE STATION, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif., Bids Sept. 2, CD 8/26;

Gil Constr. Co., 3511 Mt. Diablo Blvd., Lafayette, Calif., LB **$170,821**, est. $176,326 (5 bidders), Sched. C; (Beale Air Force Base, and Red Bluff Air Force Station, Calif.)

Royal Corp., 765 Bayshore Blvd., San Carlos, Calif., LB **$197,564** (4 bidders), storm sewer at Winchester Rd. and Rincon, CAMPBELL, CALIF. City, City Hall, Campbell, Calif. Mark Thomas, 18 N. San Pedro, San Jose, Calif., engr. CD 6/11.

Peter Kiewit & Sons, 405 E. Main St., Medford, Ore., LB **$622,033** (12 bidders), 680 ft. Martins Ferry Bridge on Klamath River, near Weitchpec, EUREKA, CALIF. Humboldt Co., Veterans Memorial Bldg., Eureka, Calif.

Pascal & Ludwig Inc., 2240 Parkway Dr., El Monte Calif., CA **$713,497**, north outfall sewer 640 ft. east Victory Blvd. to 436 ft. west Buena Vista St., LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Aug. 12. Awarded Aug. 28. CD 8/3.

Manco Constr. Co., 3754 Long Beach Blvd., Long Beach, Calif., CA **$113,113**, water treatment plant for power house, Los Angeles County General Hospital, LOS ANGELES, CALIF. Los Angles County, 501 Hall of Records, Los Angeles, Calif. Bids Aug. 12. Awarded Sept. 1. CD 7/22.

Papac Constr. Co., 604 N. Montebello Blvd. Montebello, Calif., LB **$989,091**, est. $1,000,000, (11 bidders), Encino Reservoir inlet-outlet line, Unit 2. Spec. 7166, LOS ANGELES, CALIF. Dpt. Water & Power, 316 W. 2nd St., Los Angeles, Calif. Bids Aug. 31. CD 8/12.

W. H. Christensen Inc., 18714 Parthenia St., Northridge, Calif., CA **$111,000**, recreation bldg., Alondra Park, Lawndale, LOS ANGELES, CALIF. Los Angeles County, 501 Hall of Records, Los Angeles, Calif. Bids Aug. 12. Awarded Sept. 1. CD 7/22.

† **P. J. Walker Co.**, 3900 Whiteside St., Los Angeles 63, Calif., CA **$121,900** (4 bidders), Bldg. 1810, modification, Edwards Air Force Base, MUROC, CALIF. Air Force Flight Test Center, Air Research & Development Command, U. S. Air Force Base, Edwards Air Force Base, Muroc, Calif. CD 9/10/58.

Valley Engineers, P.O. Box 992, Fresno, Calif., LB **$180,852**, water mains, appurtenances, Maloney Reservoir Inlet-Outlet line, Pinole, Spec. 801, OAKLAND, CALIF. East Bay Municipal Utility Dist., 2130 Adeline St., Oakland, Calif., CD 1/22.

McGuire & Hester Co., 796-66th Ave., Oakland, Calif., LB **$149,343**, water mains, appurtenances Diablo Suction line near Danville (Oakland, Calif.)

Gallagher & Burk Co., 344 High St., Oakland, Calif., LB **$204,242** (7 bidders), street imprvs. portion Joaquin Miller Rd., Skyline Blvd., OAKLAND, CALIF. City, City Hall, Oakland, Calif.

Brighton Sand & Gravel Co., P. O. Box 7001, Perkins Branch, Sacramento, Calif., LB **$142,110** (8 bidders), roads, curbs, gutters, walks, storm drainage, street lighting, parking for autos, installation automatic sprinkler irrigation sys. and water supply sys., Sacramento State College, W.O. 4005GC-69, 4005GC-69.1 and 4005GC-13, SACRAMENTO, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Sept. 1. CD 8/17.

C. Norman Peterson Co., 2832 Ninth St., Berkeley, Calif., CA **$276,815** (10 bidders), sewage disposal plant imprvs., SAN CARLOS, CALIF. City, City Hall, San Carlos, Calif. CD 2/6.

▲† **Pacific Constr. Ltd.**, 2826 Kaikikapwa St., Honolulu, Hawaii, **Reed & Martin Inc.**, 653 10th St., Fairbanks, Alaska, and **H. B. Zachry Inc.**, W. Harding Blvd., San Antonio, Tex. CA **$3,260,609**, zeus firing battery constr. Marshall Islands, Kwajalein Island, HAWAII. U. S. Eng., Honolulu, Hawaii.

† **Wayne Constr. Inc.** and **Reed & Martin Inc.**, 4242 22nd St. W., Seattle, Wash. CA **$590,776**, dredging fill to enlarge island, Johnson Island, HAWAII. U. S. Eng., Honolulu, Hawaii.

BUILDINGS—LB & CA

Bachner Co., Anchorage, Alaska, and **Walsh & Co.**, Spenard, Alaska, CA **$721,899**, 3 story, 36,000 sq. ft. OFFICE and CLINIC, ANCHORAGE, ALASKA. Medical Dental Bldg. Corp., Anchorage, Alaska. C. Lindsay, Securities Bldg., Seattle 1, Wash., archt. CD 7/7, under LB.

▲ **Fish Engineering Corp.**, M&M Bldg., Houston, Tex., CA Est. **$10,000,000**, 100,000,000 cu. ft. daily NATURAL GASOLINE PLANT, Aneth Field near Monticello, UTAH. El Paso Natural Gas Co., El Paso Natural Gas Bldg., El Paso, Tex.

Alder-Child Constr. Co., 250 E. 3900 S., Murray, Utah, CA **$504,100**, ELEMENTARY SCHOOL, Parowan CEDAR CITY, UTAH. Iron County Bd. Educ., Cedar City, Utah. Bids Aug. 21. CD 8/28, under LB.

Dickmann Constr. Co., 316 E. Camelback Rd., Phoenix Ariz., CA **$821,940**, ARTS BLDG., Arizona State College, FLAGSTAFF, ARIZ. Bd. Regents University Arizona, Flagstaff, Ariz. Terry Atkinson, 2424 E. Broadway, Tucson, Ariz., archt. CD 4/26/57.

† **Rutherford Constr. Co.**, P. O. Box 1778, Albuquerque, N. M.: LB **$835,000**, est. $825,091 (5 bidders), SCHOOL expansion, KINLICHEE, ARIZ. Bureau Indian Affairs, Dpt. Interior, Branch of Plant Design & Constr., Box 1777, Albuquerque, N. M. CD 7/24, under LB.

Bryant Whiting, Contractor, Springerville, Ariz., CA **$129,832**, WAREHOUSE and EQUIPMENT BLDG. OFFICE, LAKESIDE, ARIZ. Navopache Electric Cooperative Inc., Lakeside, Ariz. Awarded Aug. 26.

† **U. S. Forest Service**, 729 NE Oregon St., Portland, Ore., rejected bids Aug. 14, two 1 story, 30 x 61 ft. HOUSES, one 24 x 44 ft. bunkhouse, Darrington Ranger Station, Mount Baker National Forest, WASHINGTON. CD 8/3.

Lease Co., Inc., 1501 N. 35 St., Seattle 3, Wash., CA **$583,150**, general contract, 1 story, 55,000 sq. ft., masonry Seahurst Junior HIGH SCHOOL, SEATTLE, WASH., School Dist. 401, 253 S. 152 St., Seattle, Wash. Bids Aug. 25. CD 9/1 under LB.

Sivers Constr. Co., 1809 S.E. Hawthorne Blvd., Portland, Ore., CA Est. **$150,000**, 1 story, 200 x 300 ft., rein.-con. CAN MFG. PLANT, YAKIMA, WASH. National Can Corp., 290 Division St., San Francisco, Calif. CD 8/27.

▲ **Waldo S. Hardie & Son**, Box 422, Eugene, Ore., LB **$1,045,984** (10 bidders), SOUTHSIDE JUNIOR HIGH SCHOOL, CORVALLIS, ORE. Benton Co. School Dist. 509OJ, Corvallis, Ore. Bids Sept. 1. CD 8/7.

▲ **Spiegel Constr. Co.**, 5656 W. 3rd St., Los Angeles 36, Calif., CA **$1,489,200**, 125 stucco DWELLINGS Septo St., Lassen St., Laramie Ave., CHATSWORTH, CALIF. Devonshire Manor, 5656 W. 3rd St., Los Angeles 36, Calif. Blake & Wynne, 8418 W. 3rd St., Los Angeles, Calif., archts.

Barrett Constr. Co., 1800 Evans Ave., San Francisco, Calif., LB **$457,400** (9 bidders), general constr. 2 story, 34,800 sq. ft. HUMANITIES CLASSROOM

(Continued on page 280)

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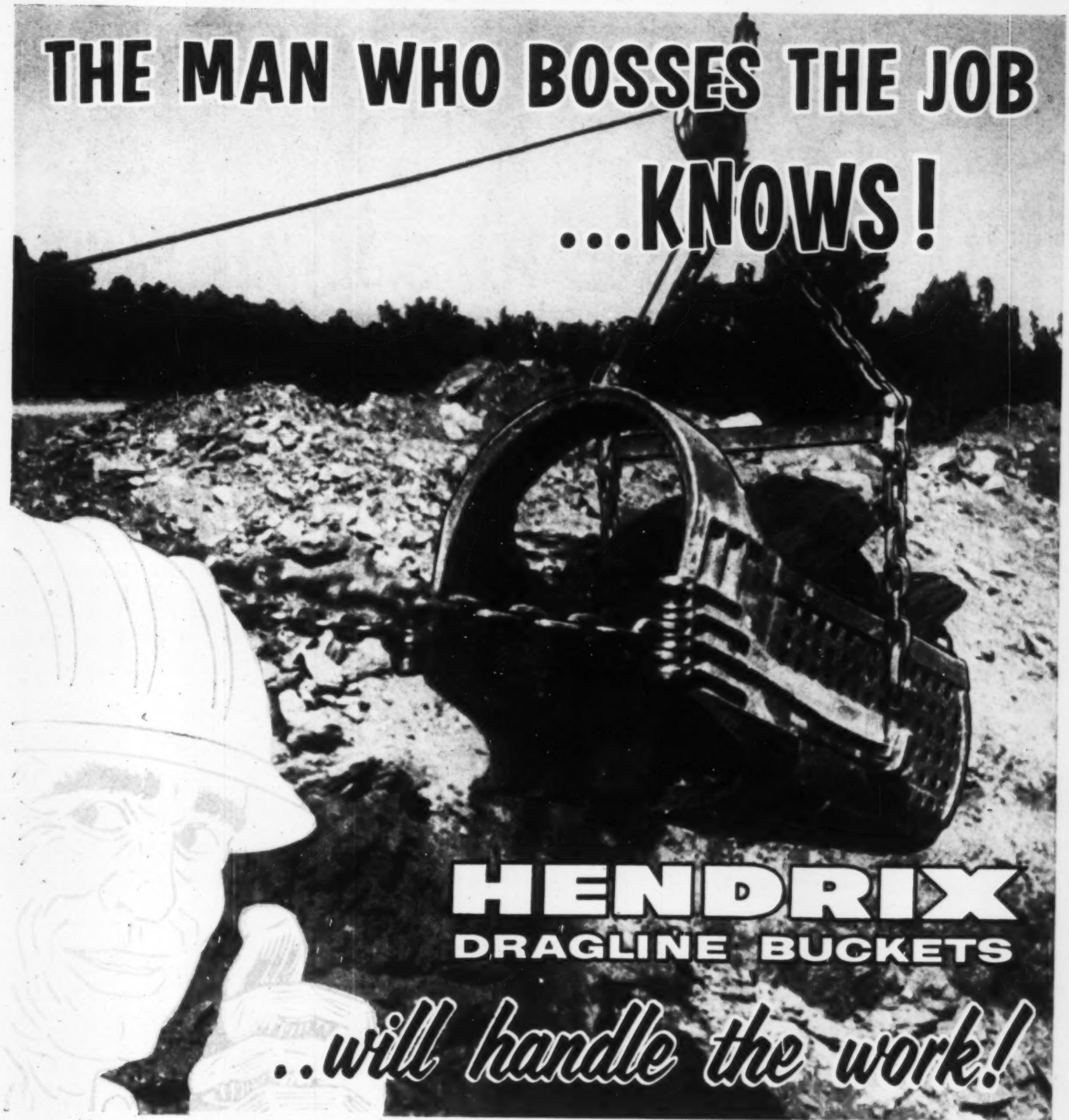
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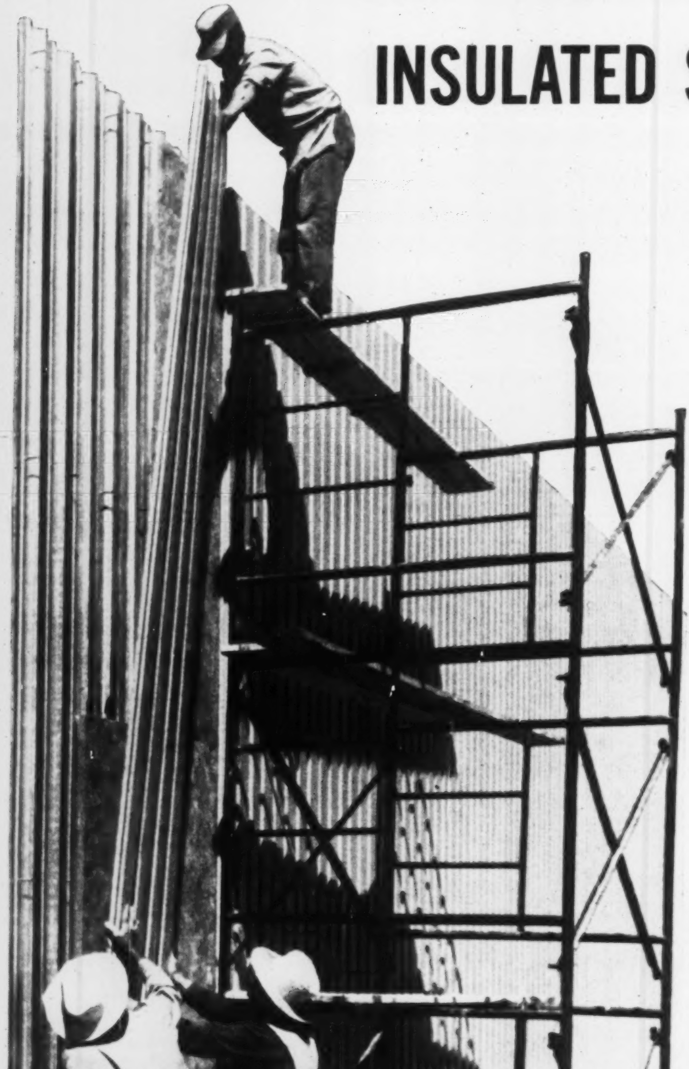

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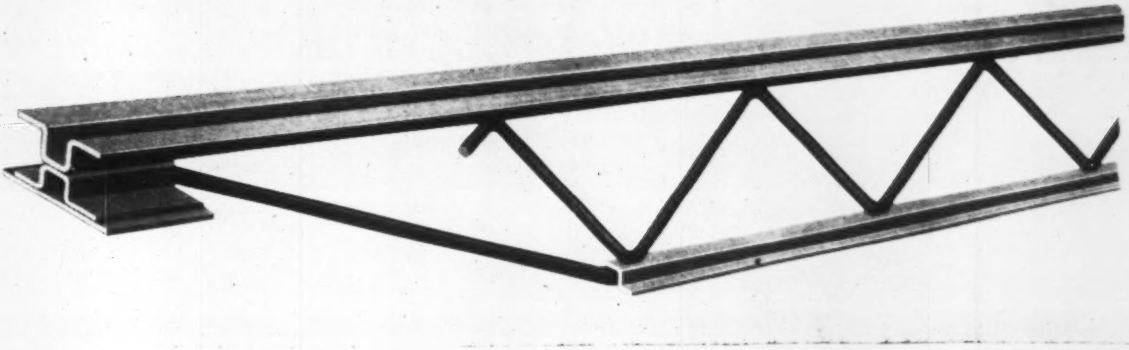
North Platte Television, Inc.
Architects: Hinde & Laurinat



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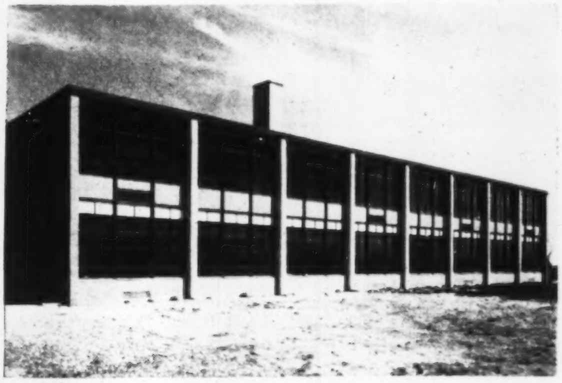

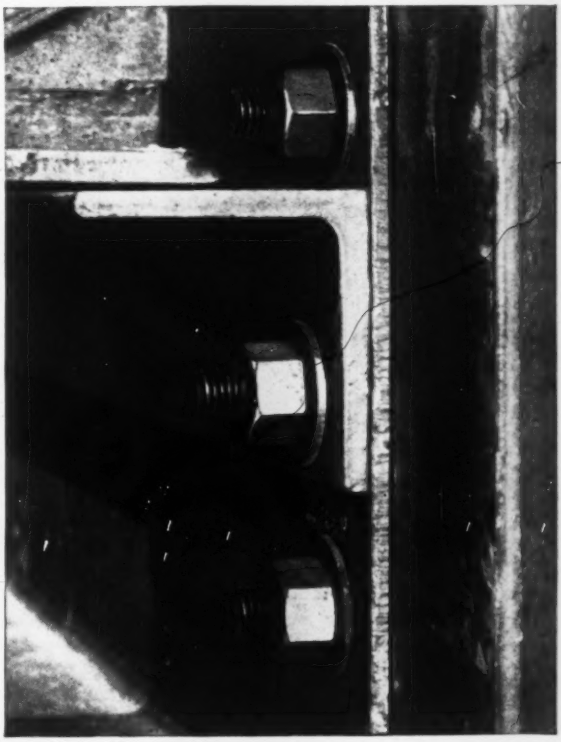

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(Continued from page 276)

Chico State College, W.O. 4005GC-1, CHICO, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Sept. 1. CD 8/10.

▲ **Los Sandos Estates**, 6381 Hollywood Blvd., Los Angeles, Calif., Owner Builds, **$1,786,000**, 128 DWELLINGS, Wichita, Waterloo, Gustavo and Elden Lanes EL CAJON, CALIF.

L. Schumacher, 8512 Gardendale St., Downey, Calif. CA **$170,775**. 165x115 tilt up MACHINE SHOP, BUENA PARK, CALIF. Floor-Prep Mfg. Co., 8512 Gardendale St., Downey, Calif. J. Paul Robinson, 1230 South St., Long Beach, Calif., engr.

Dalecrest Co., Box 609, Canoga Park, Calif. Owner builds. **$885,000**. 63 stucco DWELLINGS, Hartland St., Van Owen St., Peterson Ave., CANOGA PARK, CALIF. Dalecrest Co., Box 609, Canoga Park, Calif. Duncan & Conroy, 14200 Ventura Blvd., Sherman Oaks, Calif., archts.

Harwick & Sons Inc., 1101 Somerset Lane, Newport Beach, Calif. CA **$844,800**. Acacia JUNIOR HIGH SCHOOL, FULLERTON, CALIF. Fullerton School Dist., 340 E. Wilshire Blvd., Fullerton, Calif. Bids July 21, awarded Sept. 1. CD 7/28 under LB.

Ecker Bros., 122 Gertrude Court, Pasadena, Calif., CA **$175,000**, 55,710 sq. ft. INDUSTRIAL BLDG., 720 S. 7th Ave., CITY OF INDUSTRY, (Br. LaPuente) CALIF. Western Lead Products Co., 4530 E. Pacific Way, Los Angeles, Calif. Ben L. Schmidt, 2550 E. Foothill Blvd., Pasadena, Calif., engr.

Renton, Inc., 10835 Santa Monica Blvd., Los Angeles, Calif., CA **$451,200**, 47 DWELLINGS, Bonita, Renton and Joel Sts., LOMITA, CALIF. Dike Land Co., Inc., 10835 Santa Monica Blvd., Los Angeles, Calif.

▲ **Rossmoor Builders**, 3402 Rossmoor Way, Los Alamitos, Calif., Owner Builds, **$6,124,120**, 374 DWELLINGS, Tract 3019, LOS ALAMITOS, CALIF.

▲ **Evert & Payton**, 810 Railroad Ave., Santa Paula, Calif. LB **$1,375,439** (6 bidders) JUNIOR HIGH SCHOOL, NEWHALL, CALIF. William S. Hart Union High School Dist., 24825 N. Newhall Ave., Newhall, Calif. Bids Sept. 1. CD 8/6.

▲ **Baldwin Contg. Co.**, P. O. Box 311, Marysville, Calif., LB **$1,385,900** (11 bidders), Phase II of continuous mix facilities 0436, Solid Rocket PLANT, Nimbus Station, NIMBUS, CALIF. Aerojet-General Corp., Resident Engr's. Office, P. O. Box 1947, Sacramento, Calif.

Bermax Constr. Co., Inc., 733 N. LaBrea Ave., Los Angeles 38, Calif., CA **$420,500**, 28 stucco DWELLINGS, Reseda Blvd., Chatsworth St., Los Alimos St., NORTHRIDGE, CALIF. Nancy Homes, Inc., 733 N. LaBrea Ave., Los Angeles 38, Calif. Delta Eng., 7027 Reseda Blvd., Reseda, Calif., engr. CD 8/10.

Contempo, Inc., 12442 Moorpark St., North Hollywood, Calif., CA **$401,400**, 19 stucco DWELLINGS, Kingsbury St., Germain St., Etiwanda Ave., NORTHRIDGE, CALIF. Colette Homes, Inc., 12442 Moorpark St., North Hollywood, Calif.

San Pacific Corp., 1455 W. Lincoln Ave., Anaheim Calif., CA **$590,600**, 41 DWELLINGS, Bluefield Ave. Lisburn Pl., Viero Pl., Lorca Rd., NORWALK, CALIF. Dublin Development Co., 1455 W. Lincoln Ave., Anaheim, Calif.

A. G. Gindling, 2960 Wilshire Blvd., Los Angeles 11, Calif., CA **$820,000**, 82 stucco DWELLINGS, Francisco Pl., Bard Rd., Grand Way, OXNARD, CALIF. Flagstaff Homes, 2960 Wilshire Blvd., Los Angeles 11, Calif.

Christensen & Foster Co., Box 55, Santa Rosa, Calif. LB **$633,800** (4 bidders), Chronic Wing Shasta County HOSPITAL addn., REDDING, CALIF. Shasta County, c/o Bd. Supervs., Courthouse, Redding, Calif. Smart & Clabaugh, 1001 Yuba St., Redding, Calif., archts. CD 7/8/57.

D. N. Schneider & Assocs., 800 E. Commonwealth Ave., Fullerton, Calif. Owner builds. **$431,650**. 41 stucco DWELLINGS Berkeley Dr., Pennsylvania, Thomas and Nickolai Ave., REDLANDS, CALIF.

▲ **Grandview Bldg. Co.**, 470 S. Beverly Dr., Beverly Hills, Calif. CA **$1,352,700** 74 DWELLINGS Mossbank Dr., Spring Creek Rd., Whitestone Rd., ROLLING HILLS, CALIF. Grayslake Land Co., 470 S. Beverly Dr., Beverly Hills, Calif. Harris, Rile & Campbell, 8477 Beverly Blvd., Los Angeles, Calif., archts.

Seven-Up Co., 1248 Mt. Vernon St., San Bernardino, Calif. Owner builds. **$300,000**. 200x300 BOTTLING PLANT, 1400 "H" St., SAN BERNARDINO, CALIF.

▲ **B. O. Larsen**, 1340 E St., San Diego 2, Calif., LB **$1,308,900** (7 bidders), general constr. 1 and 2 story and two story separate bldg. men's PHYSICAL EDUCATION BLDG., San Diego State College, W.O. 4005GC-34, SAN DIEGO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Sept. 2. CD 7/31.

▲ **Teyssier & Teyssier**, 1357 7th St., San Diego, Calif. CA est. **$2,000,000**. 110,000 sq. ft. LABORATORY and office, SAN DIEGO, CALIF. General Atomic Div., General Dynamics Corp., 3165 Pacific St., San Diego, Calif. William L. Pereira & Assoc., 1231 W. 5th St., Los Angeles, Calif. and Paderewski, Mitchel & Dean, 521 B St., San Diego, Calif., archts. CD 5/4/56.

▲ **Tavares Development Co.**, Box 967, La Mesa, Calif. Owner builds. **$1,169,704**. 96 DWELLINGS, San Carlos Tr. 4 SAN DIEGO, CALIF.

▲ **Southland Development Co.**, 7612 Sepulveda Blvd. Van Nuys, Calif. CA **$2,125,000**, 37 DWELLINGS Grant, Monroe, Creston, Vine and Lincoln Sts., SANTA MARIA, CALIF. Mar Vista Inc., 116 Grant St. Santa Maria, Calif.

C. F. Van Gundun, 3105 Congress St., San Diego, Calif. CA **$661,142** (12 bidders), Carleton Hills ELEMENTARY SCHOOL, SANTEE, CALIF. Santee School Dist. Santee, Calif. Bids Aug. 27, awarded Aug. 28. CD 8/14.

Moore Built Homes, 10401 Magnolia, Anaheim, Calif. Owner Builds, **$400,000**, 40 stucco DWELLINGS, tract 3331, STANTON, CALIF.

† **U. S. Eng.**, 180 New Montgomery St., San Francisco Calif., cancelled bids to have opened Oct. 1, DEVELOPMENT CONTROL CENTER addn. Increment No. 2, ENG-04-203-60-9B, SUNNYVALE, CALIF. CD 8/26.

Exhibit Homes, 8900 W. Olympic Blvd., Beverly Hills Calif. Owner builds. **$913,000** 85 stucco DWELLINGS, Calle Ciruello, Avenida de Los Arboles, THOUSAND OAKS, CALIF.

▲ **Wm. Simpson Constr. Co.**, 2401 Beverly Blvd., Los Angeles, Calif., CA **$1,100,000**, RESEARCH LABORATORY, 2829 Maricopa St., TORRANCE, CALIF. Magnavox Co., 2131 Stoner Ave., Los Angeles, Calif.

Mulholland Enterprises, Inc., Van Nuys, Calif., Owner Builds, **$190,000**, 136x221 ft concrete MANUFACTURING PLANT, VAN NUYS, CALIF. David T. Witherly, 7233 Beverly Blvd., Los Angeles, Calif., archt.

S&S Constr. Co., 1750 S. LaCienega Blvd., Los Angeles, Calif. Owner Builds. **$686,400**. 66 DWELLINGS, Wilmaglen Dr., Kilbee Ave., Mayes Dr., Sharonhill Dr., WHITTIER, CALIF.

E. I. Noxon Constr. Co., 1513 W. Temple St., Los Angeles, Calif., LB **$619,849** (10 bidders), eight 90 ft. high SILOS for packing plant, HONOLULU, HAWAII. The Permanente Cement Co., Pier 32, Honolulu Hawaii. Bids Sept. 4. CD 8/26.

CANADA

HEAVY CONSTRUCTION—BA

Ont., Ottawa—BA 9/23—Dpt. P. Wks., Hunter Bldg. Riverside Dr. development, incl. storm sewers, grading roads and parking area, concrete curbs and sidewalks placing topsoil, street lighting (Public scenic drive) $500,000. Plans deposit $100.

Man., Rivers—BULK FUEL FACILITIES—BA 9/24—Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa Ont. bulk fuel facilities, Royal Canadian Air Force Station, $100,000. Plans deposit $100.

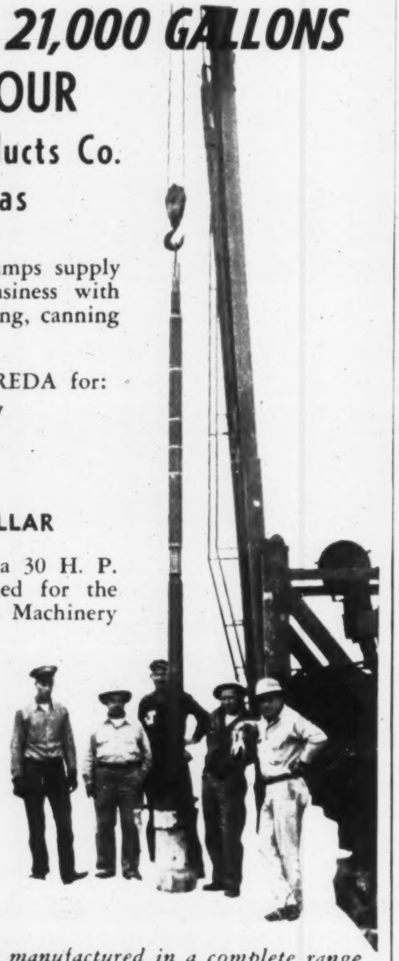
Que., St. Johns—HOSPITAL—BA 9/24—Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. 26 bed structural steel hospital, Royal Canadian Air Force Station $250,000. Plans deposit $100.

▲ **Ontario**—BA 9/29—St. Lawrence Seaway Authority No. 2 Temporary Bldg., Ottawa, superstructure and deck, Cornwall North Channel Bridge, International Rapids Section, St. Lawrence Seaway, Cornwall. $3,000,000. Plans deposit $100. H. H. L. Pratley Co., 1117 St. Catherine St. W., Montreal, Que., consult. engr.

(Continued on page 282)

REDA SUPPLIES *21,000 GALLONS* OF WATER PER HOUR

for Kimbell Food Products Co.
Fort Worth, Texas



Three Reda Submergible Pumps supply this well known Ft. Worth business with plenty of water for food processing, canning and bottling operations.

The Kimbell people chose REDA for:

- **Dependable water supply**
- **Low Maintenance Cost**
- **Low Installation Cost**
- **Low Operating Cost**
- **MORE WATER PER DOLLAR**

The installation pictured is a 30 H. P. Reda unit, one of three installed for the Kimbell Company by the Well Machinery & Supply Co. of Ft. Worth.

INSTALLATION DATA:
PUMPING DEPTH: 452 ft. (water pumped to tower 110 ft. high)
CASING: 10-inch steel casing
POWER REQUIRED: 440 volts a. c., 3 phase, 60 cycle
MAXIMUM WATER REQUIREMENTS: 210,000 gallons per day
WATER SUPPLIED BY REDA: 21,000 gallons per hour
PUMPS INSTALLED: 30 H. P. Reda unit supplying 150 g.p.m.
22½ H. P. Reda unit supplying 100 g.p.m.
20 H. P. Reda unit supplying 100 g.p.m.

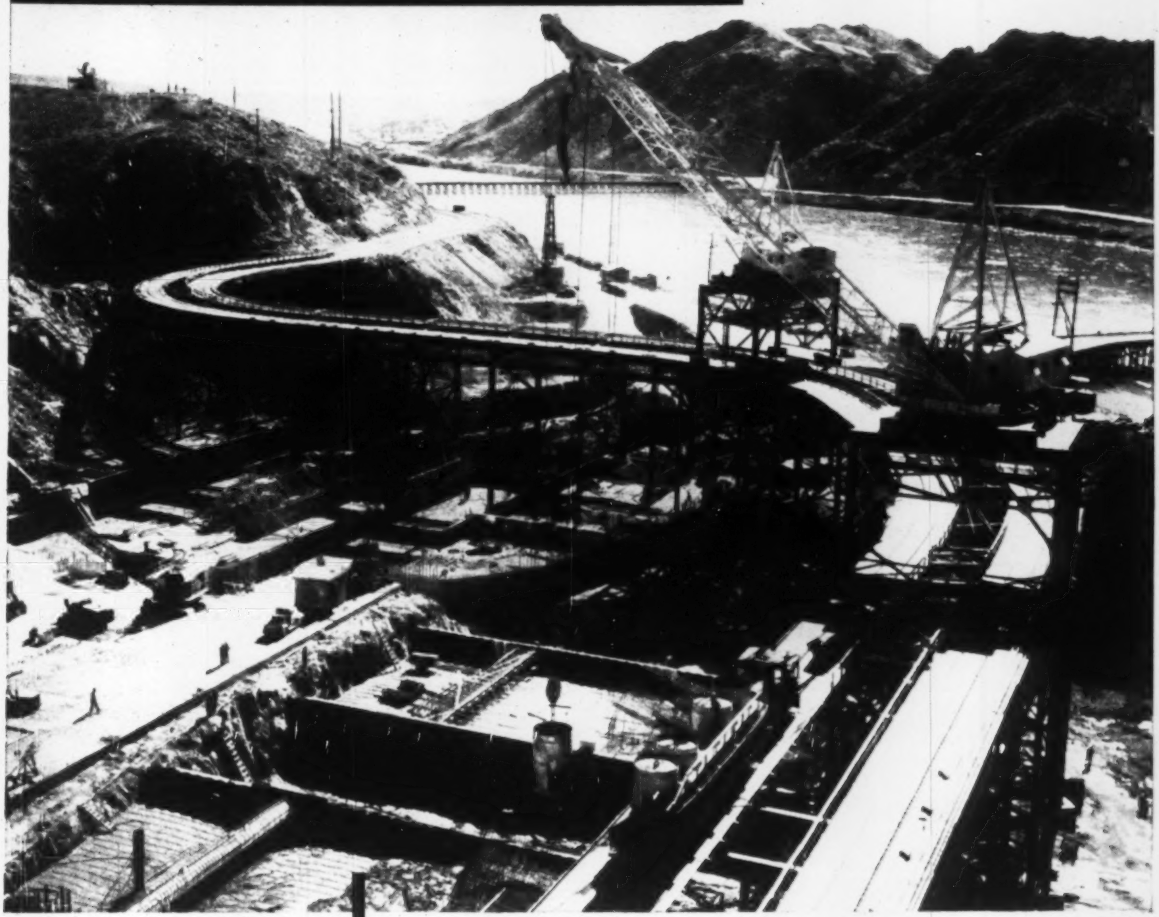
Reda Submergible Pumps are manufactured in a complete range of sizes from ⅓ to over 300 H. P., with capacities from 5 to over 1000 gallons per minute, from depths as great as 10,000 feet.

Contact Reda TODAY for Submergible pumps to meet your requirements!

SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

REDA PUMP COMPANY
BARTLESVILLE, OKLAHOMA
Manufacturers of submergible motors and pumps for over 35 years — for oil, brine and water wells, gasoline and jet fuel

What's the BIG difference in surety companies?



Some companies give you only one of these advantages. Others give you only two. Ætna Casualty gives you all three!

SERVICE . . . fast, efficient, when and where you want it. You only get that kind of service from a company like Ætna Casualty, with more than 70 supervising offices in key cities and thousands of experienced agents from coast to coast.

EXPERIENCE . . . trained Ætna Casualty specialists give you the benefit of broad and varied experience on jobs of practically every type and size.

CAPACITY . . . big enough to handle *any* job . . . no matter what the size. Ætna Casualty's qualifying limit, as set by the Federal Government, is one of the highest in the industry.

You get all three when you get

ÆTNA CASUALTY

Quality BONDING Service for contractors in every field

Ætna Casualty and Surety Company • Affiliated with Ætna Life Insurance Company • Standard Fire Insurance Company • Hartford 15, Conn.

CIRCLE 281 READER SERVICE CARD

(Continued from page 280)

BUILDINGS—BA

Ont., Sault Ste Marie—SCHOOL—BA 10/7—Bd. Educ., 3 story, 75,000 sq. ft., concrete, concrete block secondary school, **$500,000.** Plans deposit $100. John B. Parkin Assocs., 1500 Don Mills Rd., Postal Station "J", Toronto, Zone 6, archts.-engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **BRITISH COLUMBIA**—B. C. Govt., Parliament Bldgs., Victoria, Bids opened 8/25,

Windsor Constr. Ltd., 1603 W. 3rd Ave., Vancouver, B. C., LB **$1,459,802,** Proj. 1036, constr. 10.32 mi. Trans-Canada Hy., Dela and Chilliwack Dist. CD 8/19.

▲ **Carter Constr. Co. Ltd.**, 419 Cherry St., Toronto, Ont., LB **$1,369,850,** buildings, International Airport, Frobisher Bay, Baffin Island, FROBISHER BAY, N. W. T. Dpt. Transport, Hunter Bldg., Ottawa, Ont.

▲ **Atlas Constr. Ltd.**, 4781 St. Catherine St. W., Montreal Que., LB **$1,752,375,** vehicular traffic tunnels and viaducts, Park and Pine Aves., MONTREAL, QUE. City, City Hall, Montreal, Que. Bids Sept. 2. CD 8/21.

▲ **Charles Duranceau Ltee.**, 2545 Jacques Hertel St., Montreal, Que., CA **$2,593,885,** 306 ft. diameter, bsmnt., rein.-con. sports center, Maissoneuve Park, Viau and Boyce Sts., MONTREAL, QUE. City, City Hall, Montreal, Que. Bids June 3, awarded Aug. 31. CD 6/15, under LB.

Miron & Freres Ltee., 2201 Jarry St. E., Montreal, Que. CA **$593,959,** paving service roads, limits of St. Leonard de Port Maurice, MONTREAL, QUE. Montreal Metropolitan Corp., 506 St. Catherine St. E., Montreal, Que. Bids Aug. 27, awarded Sept. 2. CD 9/4, under LB.

Societe d'Enterprise Generales Ltee., 13th Ave., Gouin, Amos, Que., CA **$710,327,** 150 x 5,000 ft. runway with parking apron, taxiway and related roads at airport, SHERBROOKE, QUE. Dpt. Transport, Hunter Bldgs., Ottawa, Ont. Bids July 9, awarded Aug. 28. CD 7/17, under LB.

BUILDINGS—LB & CA

Barone Co. Ltd., 200 Chabanel St., Montreal, Que., Owner Builds, **$450,000,** HOUSING, 26 duplexes, Tanguay St., MONTREAL, QUE.

Cimota Constr. Corp., Ltd., 128 Blvd. Ste. Anne, Giffard, Que., CA Est. **$500,000.** General contract, 2 story, partial bsmnt., steel, brick SCHOOL, Ste. Foye Rd. and Holland Ave., QUEBEC CITY, QUE. Bd. Comrs. Protestant School, 945 Belvedere Ave., Quebec City, Que. Bids Feb. 2, awarded Aug. 7 (former contract cancelled). CD 2/16/50, under CA.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **El Salvador**—BA 10/1—Lempa River Hydro-electric Executive Comn., Edificio Duemas 4, Pisco, San Salvador compacted earth fill dam, Lake Guija, Lempa River. Contr. 129.

PUERTO RICO

BUILDINGS—LB & CA

▲ **Rexach Constr. Co.**, P.O. Box 8175, San Juan, Puerto Rico, CA Est. **$5,000,000-$6,000,000,** motel, hotel, yacht marina and 340 homes, FAJARDO, PUERTO RICO. Faro Constr. Corp., P.O. Box 8175, San Juan, Puerto Rico. Guillermety & Ortiz, 304 Fernandez Juncos, San Juan, Puerto Rico, archts.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Alaska, Anchorage** — City, City Hall, bond election Oct. 6, water sys. exten. into areas. **$1,000,000.** CD 1/4/56.

Ill., Pittsfield—City, City Hall, water sys. imprvs., impounding dam, Blue Creek Watershed 4½ mi. north of city, 327 acre lake, spillway, water treatment plant and connecting line to city distribution sys., **$874,000.**

▲ **Ind., Richmond**—Richmond Water Works Corp., 14 N. 10 St., water treatment plant, pumping station, mains, 60 ft. dam and 1,750,000 gal. capacity reservoir, Middleboro Pike. **$3,500,000.** Burgess & Niple, 2015 W. 5 St., Columbus, O., consult. engrs. CD 7/19/57.

O., Wooster—City, City Hall, city WW sys. imprvs. and extension. **$800,000.** Constr. 1959. CD 4/28/49.

▲ **N. M., Albuquerque**—City, City Hall, **$9,300,000** bond election Oct. 6, water supply imprvs. CD 3/19/56.

▲ **Tex., Dallas**—Dallas County WC&ID No. 6, 2936 Hickory Tree Rd., water lines, **$650,000;** water storage supply, **$250,000;** waterworks rehabilitation, **$100,000.** Homer A. Hunter & Assocs., 3708 Abrams Rd., Dallas, consult. engrs. CD 8/30/51.

SEWERS, WASTE DISPOSAL

Alabama—State Hy. Dpt., Montgomery, 2½ mi. section Wragg Swamp Canal from Old Shell Rd. W. to Sage Ave., then S. Mobile. **$500,000.**

Ala., Haleyville—City, City Hall, sanitary sewer lines. **$575,000.** Harry Hendon & Assocs., 10 Office Park Circle, Birmingham, consult. engrs.

▲ **Ala., Sheffield**—City, City Hall, sewerage system imprvs., treatment facilities, **$1,500,000.**

▲ **Alaska, Anchorage**—City, City Hall, bond election Oct. 6, sanitary sewers, **$2,000,000.** CD 10/13/54.

▲ **La., Kenner**—City, City Hall, sanitary sewerage sys. **$3,036,500.** To go ahead Spring 1960.

▲ **Massachusetts**—Commonwealth of Mass., Metropolitan Dist. Comn., Sewerage Div. 20 Somerset St., Boston, Mass., 30-36 in. rein.-con. Westwood interceptor, Canton, Westwood, Norwood. **$1,000,000.** Bids December or January.

▲ **Mich., Dearborn**—City, City Hall, bond election Nov. 3, storm sewers. **$5,700,000.** CD 11/11/57.

▲ **Mo., Poplar Bluff**—City, City Hall, voted **$1,245,000** bonds Aug. 11 disposal plant, pumping station, main trunk and lateral sewers. Haskins, Riddle & Sharp, 1009 Baltimore Ave., Kansas City, Mo., consult. engrs. CD 7/21.

▲ **N. M., Albuquerque**—City, City Hall, bond election Oct. 6, sanitary sewers, **$6,100,000;** storm sewers, **$3,600,000.** CD 3/19/56.

▲ **N. Y., Great Neck**—Great Neck Sewer Dist., sewage treatment plant expansion, modernization, Manhasset Bay, East Shore Rd. **$1,000,000.**

N. C., Hendersonville—City, City Hall, sewage treatment plant, outfall sewers, **$750,000.** Harwood Beebe Co., P.O. Box 2305, Station A, Spartanburg, S. C., consult. engr.

▲ **O., Columbus**—City, City Hall, first section Big Run Trunk Sewer, **$1,000,000.** H. G. Dill Co., 2607½ N. High St., consult. engr. CD 8/20/54.

▲ **Pa., Belle Vernon**—Municipal Auth. of Borough of Belle Vernon, sewerage facilities, **$2,000,000.** Chester Engineers, 601 Suismon St., Pittsburgh, Zone 12, consult. engrs. Constr. 1960. CD 9/1.

Pa., Boyertown—Douglas Twp. Comn., Boyertown, sewage treatment plant **$687,600.** Mast Engrg. Co., Inc., 325 Washington St., Reading, consult. engr. Constr. 1962.

▲ **Pa., Easton**—Bd. Suprvs., Palmer Twp., Easton, collecting and trunk sewers, pumping stations and force mains **$1,567,000,** to go ahead 1961.

▲ **Pa., Mount Wolf**—Manchester-Mount Wolf Sewer Auth., sanitary sewerage sys. **$1,181,000,** to go ahead 1960. CD 3/25/49.

Vt., Brandon—City, City Hall, sewage plant and sewerage sys. **$560,000.** To go ahead March 1960.

▲ **Vt., Montpelier**—City, City Hall, sewage treatment plant, Northwest Section. **$1,500,000.** Charles A. Maguire Assoc., 14 Court Square, Boston, Mass., consult. engrs. CD 12/18/57.

▲ **Wash., Seattle**—Municipality of Metropolitan Seattle, 152 Denny Way, Zone 9, tunnel to link Lake City treatment plant with North trunk sewer, **$5,000,000,** Bids in 1961; interceptor sewers at Renton and Bryn Mawr on south end of Lake Washington, as first step in metropolitan sewer sys., **$4,500,000,** Bids in early 1961; trunk sewer along east side of Lake Washington, **$18,000,000,** Bids 1962; primary treatment plant, **$11,000,000,** Bids 1962; sewage treatment plant at West Point, with connecting lines, **$12,000,000,** Bids 1962; interceptor sewers along Duwamish River and Elliott Bay, **$10,000,000,** Bids 1963. Metropolitan Engineers, 152 Denny Way, consult. engrs. CD 7/30.

Ont., Leamington—City, City Hall, sewage disposal plant, **$400,000.** M. M. Dillon Co., 141 Maple St., London, consult. engr. C. G. R. Armstrong, Bartlett Bldg., Windsor, Ont., owners engr.

BRIDGES

▲ **MAINE**—State of Maine, Augusta, **$3,900,000** bond election Oct. 12, Passagassawaukeeg River Bridge at Belfast.

STREETS AND ROADS

▲ **HAWAII**—State Hy. Dpt., 721 Keliko, Honolulu,

Island of Oahu—1.4 mi. 8, 6 lanes Luanilo Freeway-Houghtailing St. to Nuuanu St. Job FU-172-1 (3) **$4,175,000.** Bids May 1961.

0.8 mi. 8, 6, 4 lanes, Lunalilo Freeway, Kapiolani and Kapahulu structures, Unit 1 Job No. FU-072-1 (6). **$3,663,000.** Bids March 1962.

1 mi. 8, 6, 4 lanes Lunalilo Freeway Old Wailae to 8 Ave. Unit 2, Job FU-072-1 (6). **$2,687,000.** Bids March 1963.

1.1 mi. 8, 6, 4 mi. Lunalilo Freeway, 8 Ave. to 22 Ave. Unit 3, Job FU-072-1 (6). **$2,706,000.** Bids Nov. 1964.

0.2 mi. intermin. construction Liliha St., Vineyard St. to School St., Job U-090-1 (2) **$326,000.** Bids May 1961.

0.2 mi. 6 lanes Vineyard thoroughfare, Lunalilo Freeway, to Palama St. Job U-098-1 (4). **$170,000.** Bids May 1961.

Island of Kauai—2.4 mi. 2 lanes, Kauai Belt Rd., Kalihiwai to Kilauea Proj. ER-7 (1). **$1,097,700.**

3.7 mi. 2 lanes Kauai Belt Rd. Papaa to Pilaa, Proj. BD 056-1 (3). **$1,162,000.**

3.2 mi. 2 lanes Kauai Belt Rd. Pilaa to Kilauea, Proj. F-056-1 (5). **$1,001,000.**

2.5 mi. 2 lanes Hanamaulu-Nawiliwili cutoff Proj. S0510 (1). **$1,030,900.**

5.2 mi. 2 lanes Kapaa Homestead Rd., Proj. S0581 (1). **$975,000.**

▲ **Ill., Chicago**—Comrs. Cook Co., County Bldg., Expressway imprvs., paving, wid'n. Palatine Rd. Rohlwing Rd. to Milwaukee Ave., Palatine, **$7,726,000.**

▲ **Ill., Chicago**—Dpt. Purchases, City Hall, Zone 2, 1,400 ft. 4 lane highway overpass, Western Ave., Clybourn Ave. and Belmont Ave. Junction, **$1,500,000.** Dick Van Corp., 320 N. Clark St., ch. engr. CD 1/9/56.

▲ **MAINE**—State of Maine, Augusta, **$13,000,000** bond election Oct. 12, state highways.

▲ **O., Cincinnati**—Murphy Brothers, Inc., 7945 Hamilton Ave., concrete paving, sewer-water lines, treatment plant for 900 homes off Colerain Park, near Poole Rd., **$1,800,000.** Edward Niemeier, 4484 Harrison Ave., consult. engrs.

▲ **Wash., Spokane**—City, City Hall, arterial highway from Regal and Palouse Hys. to Pend Oreille Hy. Proj. No. P-Wash.-3062, **$1,698,000.** To go ahead July 1961.

EARTHWORK, WATERWAYS

▲ **Massachusetts**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass., flood control, water supply conservation and soil reclamation, Sudbury-Assebet and Concord Rivers, Concord-Sudbury. **$1,661,824.** Constr. 1960.

Massachusetts—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, flood control proj., also water conservation and soil reclamation, Blackberry River, Clayton. **$705,000.** Constr. 1960.

▲ **Texas**—West Central Texas Municipal Water Dist., Breckenridge, voted bonds Aug. 25, Hubbard Creek dam and reservoir 10 mi. N.W. of Breckenridge and approx. 60 mi. of supply lines to serve Abilene, Albany, Anson and Breckenridge. **$15,050,000.** Freese, Nichols & Endress, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 8/13.

▲ **Tex., Hallettsville**—Hallettsville Flood Control Dist. No. 3, Bd., City Hall, flood control work. **$1,000,000.**

▲ **Tex., San Angelo**—Tom Green County Water Control & Imprv. Dist. No. 1, San Angelo, gravity flow concrete-lined canals, with gates and appurtenances, **$3,000,000;** irrigation canal, running from Twin Buttes Reservoir on Concho River to connect with canal sys., **$1,000,000;** irrigating 10,000 acres in Lipan Flat, E. and N.E. of City.

▲ **Ont., Welland**—Dpt. Transport, Hunter Bldg., Ottawa, 7,000 ft. tie-up walls, Welland Canal, **$7,500,000.** Constr. in October.

AIRPORTS

▲ **Calif., San Jose**—MUNICIPAL AIRPORT—City, City Hall, plans by Rader & Assocs., archts.-consult. engrs., 1st National Bank Bldg., 100 Biscayne Blvd. S., Miami 32, Fla., Municipal Airport imprvs. **$4,000,000.**

Ill., Chicago—TERMINAL—Dpt. Purchases, City Hall, Zone 2, airport terminal, Meigs Field, **$550,000.** R. C. Brownell, City Hall, engr. CD 9/28/56.

▲ **Ind., Lafayette**—AIRPORT—Bd. of Aviation Comrs., Tippecanoe Co., 120 N. 10 St., 5,400 lin. ft. runways airport. **$2,250,000.** James C. Buckley, Inc., 30 E. 40 St., New York, N. Y., consult. engr. (survey only).

▲† **Kan., Olathe**—AIR ROUTE TRAFFIC CONTROL CENTER—Federal Aviation Agency, 4825 Troost, Kansas City, Mo., 66 x 192 ft. air route traffic control center. **$1,800,000.** Bids about January 1960. CD 12/18/58, under LB.

Mo., St. Louis County—AIRPORT IMPRVS.—St. Louis County, County Council, Court House, Clayton, Zone 5, Mo., secondary airport, incl. runways, taxiways, aprons, lighting facilities, etc., US 40 near Gumbo, Mo. **$600,000.**

▲ **Neb., Omaha**—APRON, ETC.—City Airport Auth., City Hall, apron and 13 passenger gates for terminal 1960-61, **$888,000;** stabilizing shoulders of runways for jets 1960-61, **$313,000;** lengthening runway 7,000 ft. to 9,200 ft. 1960-61, **$1,230,000,** Omaha Airport. CD 8/29/52.

N. C., Asheville—TERMINAL—City, City Hall, plans by Six Associates, 1094 Hendersonville Rd., airport terminal, Buncombe Airport, **$525,000.**

▲† **N. C., Hertford**—MAINTENANCE HANGAR—Dist. P. Wks. Office, 5th Naval Dist., U. S. Naval Base Norfolk 11, Va., plans by J. N. Pease & Co., P.O. Box 10336, Charlotte, N. C. and Roberts & Schaefer Co., Inc., 254 W. 54th St., New York, N. Y., maintenance hangar, Harvey Point Naval Air Station, **$2,500,000.** CD 9/8/58.

▲ **Tex., Fort Worth**—AIR TRAFFIC CENTER—Federal Aviation Agency, 1711 New York Ave., Wash. 25, D. C., air traffic center Amon Carter Field ½ way between Dallas and Fort Worth. **$4,000,000.** Constr. 1 year.

PUERTO RICO

▲ **Puerto Rico, Bayamon** — HOMES — Caribe Housing Inc., c/o Rexach Constr. Co., Box 8175, San Juan, plans by Guillermety & Ortiz, 304 Fernandez Junces, San Juan, 700 homes adjacent to present Santa Cruz Development, **$7,000,000.**

▲ **Puerto Rico, Bayamon** — COMMERCIAL BLDGS. — Caribe Housing, Inc., c/o Rexach Constr. Co., Box 8175, San Juan, plans by Martinez & Costa, corner Munez Rivera and Roosevelt, Hate Rey, four 2 story 465,000 sq. ft., 24 unit commercial bldgs. 17 acres, Garcia Development. **$4,500,000.**

FOREIGN

▲ **Israel Haifa** — SHIPYARD — Royal Shipyard Co. de Schelde, Flushing, The Netherlands, 1st phase shipyard. **$4,000,000.**

▲ **Syria, Homs**—PLANT—Ministry of Industry, Damascus nitrogen fertilizer plant. **$14,000,000.**

PUBLIC BUILDINGS

▲ **Ala., Athens**—SCHOOL—State Dpt. Educ., Montgomery, plans by Pearson, Humphries & Jones, 513 Madison Ave., Montgomery, Tennessee Valley Trade School 8 mi. S. of here on U. S. 31. **$1,000,000.**

Ala., Brewton, SCHOOL—City Bd. Educ., City Hall, plans by Pearson, Tittle & Narrows, First National

(Continued on page 284)

NEW FROM LORAIN
40-TON LORAIN-56

Now Lorain offers you a 40-ton crane in the 1¼-yard class . . . with 14′-long, 13′-wide crawlers . . . handles booms up to 110′. Its greater capacity and exclusive design features will increase your output . . . let you handle bigger jobs . . . boost your profits. Check these advantages:

"Shear-Ball" connection.* Like a huge ball bearing, Lorain "Shear-Ball" connects the turntable to the crawler and provides a smooth, rock-steady swing. It eliminates the adjustment, maintenance and lubrication problems of rollers and center pin designs.

35-foot Square-Tubular-Chord boom. Sealed, square-tubular-chords of high alloy steel, and sealed, round-tubular lacings make a lighter weight, stronger boom. A Lorain exclusive, this boom can reach farther, pick up greater loads.

"Joy-Stick" air power controls. Using just two levers, the operator controls single or combined operations, retains normal feel of the machine. "Joy-Stick" action applies metered air power to all turntable clutches for the smoothest, most responsive control yet devised.

This new 40-ton Lorain is convertible to dragline, clamshell, crane or hoe to fit your needs. See your nearby Lorain distributor for details.

*10 YEAR WARRANTY
ON "SHEAR-BALL" CONNECTION

The "Shear-Ball" connection has proven so reliable in ten years of field use on many hundreds of machines that Lorain now backs it with a written warranty. "Shear-Ball" connections are warranted not to fail to function under normal use and service within 10 years of delivery to user . . . warranted to be free from defects in materials and workmanship. See your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN®
ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 1¾- and 2-yard models.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

CIRCLE 283 READER SERVICE CARD

(Continued from page 282)

Bank Bldg., Montgomery, Senior High School. $625,-000. Bids in Oct. CD 3/16.

▲ **Calif., Coronado**—SCHOOL—Coronado Unified School Dist., 911 7th St., plans by Robt. Bradt, Land Title Bldg., San Diego, junior-senior high school. **$1,202,500.** CD 8/24.

▲ **Calif., La Puente**—SCHOOL—Bassett School Dist., 904 N. Willow Ave., La Puente, plans by Flewelling & Moody, 766 Cocorado Blvd., Los Angeles, 49,000 sq. ft. Tonopah School, **$1,000,000.**

▲ **Calif., Los Angeles**—COLLEGE—Bd. Educ., 1425 S. San Pedro, plans by Lindsey & Lindsey, 6311 N. Figueroa St., Los Angeles, phase III, East Los Angeles College addns. **$2,225,000.** CD 6/9/58.

▲ **Calif., San Francisco**—MEDICAL RESEARCH—Bd. Regents, University of California, No. 2 Barrow Lane, Berkeley, plans by Reid, Rockwell, Banwell & Tarics, 1019 Market St., 16 story Medical Research Bldg., University of California School of Medicine, Parnassus and 3rd Ave. **$10,000,000.**

▲ **Colo., Gunnison**—RESIDENCE HALLS—Western State College, Campus, plans by Berne, Muchow, Baume & Polivnick, 1225 Bannock, Denver, residence halls and cafeteria, Western State College. **$1,500,000.**

▲ **Del., Stanton** — SCHOOL — Stanton Delaware School Dist., plans by Whiteside, Moeckel & Carbonell, 9 and Market Sts., Wilmington, Stanton Junior High School addn., **$1,000,000.** Louis H. Doane, Penna. R. R. Bldg., Wilmington, consult. engr. Bids about Sept. 15. CD 8/20.

▲ **Fla., Miami**—SCHOOLS—Dade Co. Bd. P. Instruction, Admin. Bldg., 275 NW 2 St., plans by F. H. Shuflin, Assocs. DuPont Plaza Center, West Homestead Elementary School, 790 SW 15 Ave., Homestead, **$400,-000;** plans by Steward-Skinner & Assocs., DuPont Plaza Center, Honey Hill Junior High School NW 195 St. and 12 Ave., **$600,000.** CD 11/3/55.

▲ **Ga., Smyrna** — HOSPITAL — Smyrna Hospital Auth., plans by Gregson & Assocs., Mortgage Guarantee Bldg., Atlanta, hospital, **$1,000,000.**

▲ **Ill., Chicago**—POLICE ACADEMY—Dpt. Purchases, City Hall, Zone 2, 5 story, 55 x 180 ft. police academy, Roosevelt Rd. and State St., **$1,500,000.** Paul Gerhardt Jr., City Hall, ch. archt.

▲ **Ind., Bloomington**—PSYCHOLOGY LABORATORY—Bd. Trustees, Indiana University, Admin. Bldg., University Campus, 40,000 sq. ft. psychology laboratory, **$1,000,-000.** Constr. in 1961.

▲ **Ind., Marion**—SCHOOL—**Bd. Educ.**, plans by Louis Kingscott & Assoc., 511 Monroe St., Kalamazoo, Mich., high school, **$3,500,000.**

▲ **Ind., New Albany**—CITY COUNTY MUNICIPAL BLDG.—New Albany-Floyd Co. Bldg. Auth., plans by Walker-Applegate-Cakes & Ritz, 218 Elsby Bldg., 4 story city county municipal bldg., **$2,300,000.** Southern Engr. Co., 322 W. Jefferson, Louisville, Ky., consult. engr. CD 4/16/58.

▲ **Iowa, Cedar Rapids**—SCHOOLS—Bd. Educ. Community School Dist., **$4,990,000** bond election Sept. 29, schools.

▲ **Me., Orono**—BUILDINGS—State of Maine, Augusta, **$3,950,000** bond election Oct. 12, buildings at University of Maine.

▲ **Mass., Woburn**—SCHOOLS—City, School Dpt., City Hall, elementary school addn., East Woburn, **$400,-000;** high school addn. **$450,000;** elementary school addn., Westside. **$400,000.** Constr. 1960.

▲ **Miss., McComb** — SCHOOLS — McComb Municipal Separate School Dist., plans by Ragland Watkins, McComb, Miss., schools. **$1,000,000.** CD 6/22.

▲ **N. J., Bayville**—SCHOOL—Bd. Educ. Central Regional High School Dist., plans by Ernest Brown, 7 Watchung Ave., Plainfield, high school addn., Berkeley Twp., **$1,000,000.** CD 2/6.

▲ **N. J., Sayreville**—SCHOOL—Bd. Educ., referendum on project and bonds Oct. 6, high school, **$3,425,000.** Edwards & Green, 17 South 5 St., Camden, N. J., archts. CD 7/1.

▲ **N. M., Albuquerque**—CITY-COUNTY BLDG.—Bernalillo Co., and City of Albuquerque, **$4,000,000** bond election Oct. 6, city-county bldg.

▲ **N. Y., Island Park**—SCHOOL—Bd. Educ., plans by Reginal E. Marsh & Assoc., 101 Park Ave., New York 17, N. Y., elementary-junior high school, Broadway between Audabon & Trafalgar Blvds. **$2,000,000.**

N. Y., Yaphank — PRISON-FARM, etc. — Bd. Suprvs. Suffolk Co., Riverhead, N. Y., plans by Beatty & Berlenbach, 32 Court St., Brooklyn, N. Y., 1 story, brick, concrete prison-farm, dormitory and bakery. **$975,000.**

N. C., Asheville—SCHOOL—City Bd. Educ., Junior High School, plans by Six Associates, 1095 Hendersonville Rd., Grace elementary school, **$625,000.**

† **S. C., Charleston**—CAPEHART HOUSING—Dist. P. Wks., Office, 6th Naval Dist. Naval Base, Charleston, plans by Reid Hearn & Assocs., 600 Beltline Blvd., Columbia, 40 Capehart Housing units, Naval Ammunition Depot. **$650,000.**

S. C., Clemson—PHYSCIS BLDG.—Clemson College, plans by Baker & Gill, 609 Chestnut St., Florence, physics bldg. **$850,000.** Campbell & Leppard, 3 W. Lewis Plaza, Greenville, consult. engrs.

S. C., Greenville—SCHOOL—Greenville County School Dist. 520, North Pleasantburg Dr., plans by the McPherson Co., 408 S. Main St., Wood-Groce School, Greer, **$600,000.**

▲ **S. C., Rock Hill**—SCIENCE—Winthrop College, Rock Hill, plans by Baker & Gill, 609 Chestnut St., Florence, science bldg. **$1,000,000.** CD 6/30.

▲ **Tenn., Elizabethton**—SCHOOL—Carter County School Bd., high school. **$1,074,000.**

▲ **Tex., Denton**—DORMITORY—Bd. for Texas State Hospitals & Special Schools, 4405 N. Lamar Blvd., Austin, plans by Harper & Kemp, 710 Thomas Bldg., Dallas, 300 bed dormitory addn. Denton State School, **$1,250,000.**

▲† **Tex., Fort Hood**—CAPEHART HOUSING—U. S. Eng., Box 1229, Galveston, plans by Alexander Dunaway & Jones & Johnson, 2712 Danville St., Houston, 800 Capehart Housing Units. **$11,200,000.** Bernard Johnson & Assocs., 4926 Travis St., Houston, consult. engrs. CD 4/8.

▲ **Tex., Huntsville**—PRISON—Texas State Prison Bd., State Bldg., Austin, plans by Geo. L. Dahl, 2101 N. St. Paul St., Dallas, prison, Ferguson Farm, **$4,500,-000,** prison unit 12 mi. from here, **$2,000,000,** industrial training center (shop etc.) 2 mi. north of here, **$500,000.** CD 6/7/55.

▲ **Tex., Pharr**—SCHOOL—Pharr-San Juan Ind. School Dist., P. O. Box 321, Pharr, plans by Burkhardt, Taniguchi, Ford & Zisman, Pharr, high school, **$1,200,-000.** Bids about Nov. CD 8/26.

▲ **Tex., Refugio**—HOSPITAL—Refugio County, Courthouse, plans by Page, Southerland & Page, 602 West Ave., Austin, archts.-consult. engrs., county hospital, **$1,500,000.**

Utah, Cedar City—HOSPITAL—Bd. Comrs., Iron Co. voted bonds Aug. 25, 60 bed hospital **$750,000.** Gardner & Rasmussen, 173 S. 2nd W., Cedar City, archts. CD 8/13.

▲ **Utah, Ogden**—SCHOOL—Weber County School Bd., 1122 Washington Blvd., Bond Election Oct. 20, schools, **$1,500,000.**

† **Va., Quantico**—SCHOOL—Housing & Home Financing Agency, 1626 K St. N. W., Wash., D. C., plans by John M. Walton Assoc., 2049 15th St., North, Arlington, 36,000 sq. ft. high school, Marine Corps Schools. **$670,000.**

▲ **Va., Richmond**—SCHOOL—Henrico Co. School Bd., 22 and Main Sts., plans by Leary & Ciucci, 1 E. Main St., school, Montezuma Dr., Central Gardens, Dirk Dr. School, Chamberlayne Heights. **$1,150,000.** CD 1/5/54.

Wis., Manitowoc—JAIL AND TRAFFIC CENTER—Manitowoc Co., plans by Fred W. Raeuber & Assocs., 1024 S. 9 St. and Sylvester Schmitt, Two Rivers, 3 story 65 x 110 ft. jail and traffic center, **$575,000.**

Wyo., Casper — HOUSING FACILITIES — Natrona Co. School Dist., plans by Goodrich & Wilking, 226 E. 2 St., 2 story, bsmnt., housing, Casper College. **$600,000.** CD 12/11.

(Continued on page 286)

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Merritt Chapman & Scott Corp.	North Island, Norfolk Tunnel Norfolk, Va.
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(Continued from page 284)

Wyo., Laramie—STUDENT HEALTH SERVICE, etc.—University of Wyoming Campus, plans by Sam C. Hutchings, Jr., 1902 Thomas Ave., Cheyenne, 2 story student health service and college of nursing. **$750,000.** CD 2/16.

B. C., Vancouver—BUILDING ADDN.—University of British Columbia, Campus, Vancouver, plans by Thompson Berwick & Pratt, 1553 Robson St., 4 story, 50 x 130 ft. rein.-conc. brick Westbrook Building addn. for faculty of pharmacy. **$500,000.** O. Safir & Co., 525 Seymour St., consult. engr. CD 4/24.

▲ **Man., Fort Garry**—SCHOOL—Fort Garry School Dist., plans by Smith, Carter, Searle & Assocs., 65 Dewdney Ave., Winnipeg, senior high school, **$1,000,000.** CD 2/14/58.

▲ **Newfoundland, Grand Falls**—HOSPITAL—Grand Falls Hospital Committee c/o Associated Hospital Consultants archts., 232 St. George St., Moncton, N. B., 100 bed hospital, Circular Rd., **$2,000,000.**

▲ **Que., Three Rivers**—SCHOOL—Provincial Government, Dpt. Youth & Social Welfare, Parliament Bldgs., Quebec, plans by Jean Louis Caron, 1277 Blvd. Des Forges, 2 and 3 story, brick reinf. conc. frame Normal school near Couvent du Carmel. **$1,000,000.** CD 1/6.

COMMERCIAL BUILDINGS

▲ **Ala., Huntsville**—SHOPPING CENTER—William P. Engel, 1921 1 Ave., N. Birmingham, 200,000 sq. ft. shopping center Memorial Parkway. **$2,500,000.** Constr. in 1960.

▲ **Calif., Dublin**—MOTEL, etc.—Motel Inter-State Sys., Inc., 18 S. LaSalle St., Chicago, Ill., 200-unit motel, shopping center, drive-in-theater, golf course Dublin Blvd. and Hy. 21. **$1,000,000.**

▲ **Calif., Northridge**—DWELLINGS—Fisk Land Co., 18570 Sherman Way, Reseda, 134 dwellings, tract 18654. **$2,225,600.**

▲ **Calif., Palmdale**—MOTEL, etc.—Cecil Jones Investment Co., c/o Kenney, Skaggs, Dexter, archts., 2 Niles St., Bakersfield, Palmdale Arms Motel, shopping center **$2,500,000.**

▲ **Calif., Santa Monica**—MOTEL—Doric Co., 500 Wall St., Seattle, Wash., Surf Rider Motel Addn. **$2,000,000.**

▲ **Conn., South Windsor**—HOUSES—Valley View Estates, Kelly Rd., 100 houses, Valley View Estates, Kelly Rd., **$1,000,000.**

▲ **D. C., Wash.**—CHURCH—National Presbyterian Church Inc., Connecticut and N. Sts., plans by Edward Stone, 38 E. 65 St., New York, 21 N. Y., church and office, Massachusetts and New Mexico Aves., **$2,000,000.**

▲ **Ga., Atlanta**—MOTOR MOTEL—Julius Epstein, 231 S. LaSalle St., Chicago, Ill., motor hotel, **$2,000,000.**

Ga., Griffin—CHURCH—First Methodist Church, 108 S. Hill St., plans by Gerald L. Bilbro, 525 E. Taylor St., church **$525,000.** John W. Oxford, Jr., E. Taylor St., consult. engr.

▲ **Hawaii, Honolulu**—RESIDENTIAL DEVELOPMENT—American Factors, 745 Fort St. and Joseph Pao, 1514 Kona St., residential development Upper Moana Valley **$10,000,000.**

▲ **Hawaii, Kona**—HOTEL, etc.—Williams Hotel Corp., 2440 Kalakaua Ave., Honolulu, plans by Frank Lloyd Wright Foundation, Spring Green, Wis., a 200 room hotel, shopping center **$3,000,000.**

▲ **Ill., Berwyn**—BANK—Marshall Savings & Loan Assn., 3722 S. Harlem Ave., plans by B. T. Moravec, 1841 S. Austin Ave., Cicero, bank addn. **$1,000,000.** Bids 1960.

▲ **Ind., Hammond**—MOBILE HOME PARK, etc.—Canterbury Gardens, c/o Kenneth W. Dobert & Assocs., consult. engr., 3003 Duluth St., Highland, 1 and 2 story, brick and concrete block (a) mobile home park, (b) shopping center, (c) 55 unit motel, (d) service station, (e) swimming pool, **$1,200,000.**

▲ **Ind., Indianapolis**—HOTEL—Owner, c/o Marott Hotel, 2625 N. Meridian St., plans by C. Wilbur Foster Assocs., Washington St., 4 story, brick and stone hotel, swimming pool, 200 car parking, 38th and Meridian St., **$2,500,000.** Constr. in 1960.

▲ **Ind., Lafayette**—HOSPITAL—St. Elizabeth Hospital, 1021 N. 14 St., plans by Walter Scholer & Assocs., 1114 State St., 46 x 172 ft., brick, 96-bed hospital addn., **$1,500,000.** Constr. in summer 1960. CD 5/15/52.

▲ **Ky., Owensboro**—SHOPPING CENTER—Westgate Plaza Shopping Center, c/o Virgil C. Hoagland, archt., 919 Underwriters Bldg., Indianapolis, Ind., 1 story 132,000 sq. ft. brick and stone shopping center incl. 1,000 car parking. **$1,500,000.**

▲ **La., Vidalia**—SHOPPING CENTER—John J. Nossier, Natchez, Miss., Concordia shopping center. **$1,000,000.**

▲ **Mass., Natick**—SHOPPING CENTER—Atlantic Development Co., c/o Samuel Glaser Assoc., archts., 234 Clarendon St., Boston, Mass., shopping center, Worcester Turnpike. **$2,000,000.** Constr. 1959.

▲ **Mass., Roxbury**—HOSPITAL WING—Peter Bent Brigham Hospital, 721 Huntington Ave., plans by The Architects Collaborative, 63 Brattle St., Cambridge, Mass., Phase 1, wing for private patients, etc. **$2,000,000.** CD 7/8.

▲ **N. J., Newark**—APARTMENT—Atlantic-Funding Corp., 543 Mount Prospect Ave., 16 story apartment house, Woodside Ave. and Mount Prospect. **$3,000,000.**

▲ **N. M., Albuquerque**—HOTEL, etc.—Albuquerque Co., Inc., c/o Mrs. Blanche S. Trigg, V.P., 317 5 St., SW, Albuquerque, 7 story hotel **$3,500,000**; 2 swimming pools, appurtenances, **$100,000**; grounds area and auto parking center, **$100,000**; site area earthwork, **$62,500.**

▲ **N. Y., Forest Hills**—OFFICE—Lane Realty Corp., 107-40 Queens Blvd., Forest Hills, N. Y., plans by Milton F. Kirchman, 230 W. 13th St., New York 4, N. Y., 12 story office, southeast corner Queens Blvd. and 70 Rd. to be called "Licht Bldg." **$2,500,000.**

▲ **N. Y., New York**—APARTMENT—Bims Assocs. Inc., 400 Madison Ave., New York 17, N. Y., plans by Horace Ginsbern & Assocs., 205 E. 42nd St., New York 17, N. Y., apartment 1221 Lexington Ave. **$1,000,000.**

▲ **N. Y., New York**—APARTMENT—440 E. 62nd St. Corp., 691 Gerard Ave., New York 51, N. Y., plans by Leo Stillman, 332 E. 149th St., New York 51, N. Y., 19 story apartment, 440 E. 62nd St. and 1143-7 York Ave. **$2,000,000.**

N. Y., New York—APARTMENT—Frank Kalisch, 554 W. 48th St., New York, Zone 19, plans by H. I. Feldman, 415 Lexington Ave., New York 17, N. Y., apartment, 520-28 East 81st St. **$960,000.**

▲ **N. Y., Rego Park**—OFFICE—Harold Menowitz c/o Morris Rothstein & Sons, archt., 186 Joraleman St., Brooklyn 2, N. Y., 8 story office, Queens Blvd., 59th Ave., 60th Ave. and 92nd St. **$1,500,000.**

▲ **N. Y., White Plains**—EXECUTIVE OFFICE—Picker X-Ray Corp., 25 South Broadway, plans by Kahn & Jacobs, 2 Park Ave., New York 16, N. Y., 1 and 2 story 44,500 sq. ft. steel frame executive office, Mamaroneck Ave. 10-acre site. **$1,000,000.** Jaros, Baum & Bolles, 730 3rd Ave., New York, N. Y., mechanical engrs. Garfinkle & Marenberg, 100 W. 42nd St., New York, N. Y., structural engrs. Clarke & Rapuano, 830 3rd Ave., New York, N. Y., site engrs. CD 7/22.

▲ **O., Broadview Heights**—HOMES—Bajen Constr. Co., 7668 N. Linden Lane, Cleveland 30, 60 homes, Avery Rd., **$1,500,000.**

▲ **O., Cincinnati**—HOMES—Murphy Bros., Inc., 7945 Hamilton Ave., 900 brick homes, off Colerain Pike, near Poole Rd., **$15,000,000.** Edward Niemeier, 4484 Harrison Ave., consult. engr.

▲ **O., Cleveland**—APARTMENT—A. Mintz & Sons Bldgs. Co., 4098 Lee Rd., Zone 28, plans by Howard Green Design Service, 2138 Lee Rd., Zone 18, 9 story, 100 suite apartment, 100 car inside parking, 2145 Stearns Rd., **$1,500,000**

▲ **O., Mt. Healthy**—HOUSES—Northbrook Homes Inc., Pippin Rd., 142 houses, off Pippin Rd., **$1,750,000.** Edward Niemeier, 4484 Harrison Ave., consult. engrs.

▲ **O., Youngstown**—HOMES—Ralph Hartenstein & Assocs., 4208 Market St., 600 homes, 220 acres in Boardman Twp. between Market St. and Hitchock Rd. to be known as Lake Forest Development, **$10,000,000.**

▲ **Okla., Tulsa**—APARTMENT-PROFESSIONAL BLDG.—John Weible, 117 E. 35th Pl., plans by Blaine Imel, 3615 S. Harvard, 140 unit apartment, **$1,000,000**; professional bldg., 52nd and Harvard, **$500,000.**

▲ **Pa., Shiremanstown**—DWELLINGS—D. P. Raffensberger, 320 Market St., Lemoyne, 142 residential dwellings. **$2,500,000.**

▲ **R. I., Providence**—BIOLOGY—Brown University, Prospect St., plans by Robinson, Green & Beretta, 2 John St., Providence, biology bldg., campus, **$1,600,000.**

S. C., Greenville—YMCA BLDG.—YMCA, 105 E. Coffee St., plans by J. E. Sirrine Co., 315 S. Main St., 49,000 sq. ft. YMCA **$600,000.** CD 3/16.

Tex., Dallas—SCHOOL—Jesuit High School Bd., 3812 Oaklawn St., plans by Geo. L. Dahl, archt.-consult. engr., 2101 N. St. Paul St., high school Walnut Hill Lane **$450,000.**

▲ **Tex., Dallas**—SHOPPING CENTER—Northlake Development Corp., c/o Davis Bruton Jr., 1st National Bank Bldg. Plans by Williams & Reeves, 6501 Hillcrest St., 1 story 150,000 sq. ft. steel frame shopping center area Ferndale and N. W. Hy. **$2,000,000.**

▲ **Tex., Dallas**—YMCA—Young Men's Christian Association, 605 N. Ervay St., downtown main YMCA **$1,500,000**, remodeling and imprv. YMCA **$2,000,000.**

▲ **Tex., Houston**—HOTEL, etc.—Lincoln Liberty Life Insurance Co., 518 Milam St., plans by Kenneth E. Bentsen, Asso. & Suprv. archt., 3400 Montrose Blvd., Houston, and Quinn & Christiansen, 134 N. LaSalle St., Chicago, Ill., archts.-consult. engrs., 25 story and bsmnt. 800 room hotel and office, **$15,000,000.** Sheraton Co. of America, lessee. CD 5/26.

▲ **Va., Richmond**—SHOPPING CENTER—Willow Lawn, Inc., 1726 L St. N.W., Wash., D. C., plans by Joseph Saunders, 1726 L St. N.W., Wash., D. C., 57,000 sq. ft. Willow Shopping Center addn. **$1,000,000.**

▲ **Wash., Des Moines**—RETIREMENT HOME—Wesley Gardens Corp., Des Moines, plans by Bain & Overturf, 904 7th Ave., Seattle, Zone 4, rein.-conc. retirement home, **$3,000,000.** Constr. 1959. Stanley Webster, Colman Bldg., Seattle, engr. CD 4/16.

▲ **Wash., Seattle**—APARTMENT—W. H. Albright, 19661 1 Ave. S. Plans by R. Burkhard, 2120 S.W. 152 St., 96 units apartment **$1,900,000**; medical and office, Arrow Lake, **$700,000.** Constr. this year.

▲ **Wash., Tacoma**—APARTMENT—L. B. Seiwerath et al, 917 Pacific Ave. Plans by L. M. Petersen, 915½ Pacific Ave., 13 story steel frame Belmont Terrace apartment, 27 Broadway **$2,000,000.** Constr. in Oct.

Wis., Cudahy—DEPARTMENT STORE—Edward Schuster & Co., and James L. Callan, 4417 W. North Ave., Milwaukee, plans by E-A Assocs., 3547 N. Oakland Ave., Milwaukee, 2 story, bsmnt., 140 x 142 ft., concrete steel brick department store **$600,000.**

Ont., Penetanguishene—MOTEL MARINA—Georgian Bay Estates Development c/o Axler & Palmer, 4972 Dundas St. W., Toronto, plans by Elmar Tampold Assocs., 1500 Don Mills Rd., Don Mills, motel marina, **$750,000.**

▲ **N. S., Sydney**—SHOPPING CENTER—Owner c/o Wilfred H. Maxwell, Shopping Center Consultant, Sydney, 100,000 sq. ft., 12.6 acre shopping center to be called Breton Plaza, Prince St., **$2,000,000.**

INDUSTRIAL BUILDINGS

Ark., Wynne—PLANT—John Addison Footwear, Inc., Marlboro, Mass., 60,000 sq. ft. shoe mfg. plant, Wynne Industrial Park, **$450,000.**

▲ **Calif., Richmond**—PLANT—California Chemical Co., Div. Standard Oil of California, Standard Ave., 20 million lb. per year maleic anhydride plant.

Calif., South Fremont—PLANT—Inland Steel Products Co., 1321 W. Winton Ave., Hayward, Calif., steel plant, Warm Springs Industrial Area **$750,000.**

▲ **Conn., New Britain**—PLANT—American Hardware Corp., 10 Franklin Sq., 1 story, mfg. plant, **$1,000,000.** Walter Kidde Constructors, Inc., 140 Cedar St., New York, N. Y. consult. engr.

▲ **Conn., Milford**—PLANT—Eversharp, Inc., 350 Fifth Ave., New York, N. Y., plans by Caproni Assocs., 132 Temple St., New Haven, fountain pens and electric razor mfg. plant and office. **$1,500,000.** CD 8/6.

Ind., Huntington—FACTORY—Owner, c/o Lock Steel Chain Co., lessee, 1085 Connecticut Ave., Bridgeport, Conn., 1 story, concrete block, masonry factory addn. **$800,000.**

▲ **Ind., Terre Haute**—COAL MINE-TIPPLE AND OFFICE—Snow Mill Coal Corp., 513 Merchants National Bank Bldg., coal mine-tipple and office, Clinton Twp. **$1,500,000.** Robert W. Mitchell, 1823 S. 29 St., consult. engr. CD 3/12/47.

▲ **Mass., North Adams**—LABORATORY, etc.—Sprague Electric Co., North Adams, Mass., laboratory and office bldg. **$1,600,000.**

▲ **Minn., Golden Valley (P. O. Minneapolis)**—PLANT—**Continental Baking Co.**, 1200 Third Ave. S., Minneapolis, Minn., plans by Magney, Setter, Leach, Lindstrom & Erickson, 250 Foshay Tower, Minneapolis, Minn., 1 story plant, Wayzata Blvd. and Pennsylvania Ave. **$1,250,000.** CD 8/5.

▲ **Mont., Missoula**—PLANT—Vancouver Plywood Co., 1010 Washington St., Vancouver, Wash., plywood plant **$2,500,000.**

N. C., Winston-Salem—PLANT—Farmers Cooperative Dairy, 1012 S. Marshall St., plans by H. R. McLawhorn, Jr., 116-A W. Market St., Greensboro, 30,000 sq. ft. milk processing plant, **$400,000.** Watson Engineering Service, 914 Summit Ave., Greensboro, consult. engrs.

▲ **Ore., Albany**—PLANT—Wood Fiber Co., Albany, particle board plant, **$1,500,000.**

▲ **Tex., Houston**—TERMINAL—Texas Butadiene & Chemical Corp. and Hess Terminal Corp. c/o Bank of Southwest Bldg. Houston, 8,000 ton Butadiene Terminal on Houston Ship Channel, **$1,000,000.**

Tex., Houston—PLANT—The Houston Post, 2410 Polk St., plans by Herbert Voelcker & Assocs., 1202 Dennis St., 3 story 25 x 175 ft. newspaper plant addn. **$500,000.**

▲ **Va., Portsmouth**—POWER STATION—Virginia Electric & Power Co., 7th and Franklin Sts., Richmond, fourth unit power station: **$30,500,000.**

▲ **Wash., Clarkston**—CEMENT PLANT—Ideal Cement Co., Denver National Bldg., Denver, Colo., cement plant with capacity to produce 1.5 million barrels annually, **$14,000,000.** Constr. 1960.

UNCLASSIFIED

▲ **Alaska, Anchorage**—OFF STREET PARKING FACILITIES—City, City Hall. Bond election Oct. 6, off street parking facilities, **$2,500,000.**

Ill., Belvidere—PARKING LOTS—City, City Hall, four off-street parking lots, **$185,030.** Robert E. Anderson, 16 E. Main St., St. Charles, consult. engr.

Iowa, Cedar Falls—SWIMMING POOL—City, City Hall, voted **$225,000** bonds Aug. 4, swimming pool. Larkin & Assocs., 19 E. Gregory St., Kansas City, Mo., consult. engr. CD 7/30.

▲ **Louisiana**—GAS LINES, etc.—Columbia Gulf Transmission Co., 507 Dallas St., Houston, Tex., 10 mi. 12 in. loop gas line, Vermilion Parish, 9 mi. various sizes field gas lines, Arcadia and Vermilion Parishes, **$220,000**; 10 mi. 20 in. loop gas line, Jefferson Davis and Vermilion Parishes, and 3 mi. 6 in. loop, Cameron Parishes, **$628,000**; 11 mi. gas supply line connecting Blk. 17 field, Cameron Parish, **$110,000.**

Oklahoma—CRUDE LINES—Mid-Continent Pipe Line Co., 907 Detroit, Tulsa, crude lines, 3 mi. 10 in., Duncan to Velma; 6 mi. 8 in., Cromwell to Tiger Creek Junction; 5 mi. 6 in., Key West to Beggs; 12 mi. 8 in., Drumright to Tulsa; 7 mi. 4 in., Key West to Davenport: **$396,000.**

Texas—GAS LINE—Coastal States Gas Producing Co., Tulsa Oil Industries Bldg., Tulsa, Okla., 60 mi. 10 in. gas line from point near Cotulla, LaSalle Co. to main line Frio Co. **$900,000.**

Mississippi—RURAL DISTRIBUTION LINES—Coast Electric Power Assoc., Bay St. Louis, Miss., 100 mi. distr. lines, 16 mi. 44 KV transmission line, 35 mi. line conversions and 2500 KVA sub-station, Hancock and Harrison Counties. **$898,000.** CD 3/27/57.

Que., Baie des Aigles—WHARF—Hydro-Quebec, Inc., 107 Craig St. W., Montreal, wharf, **$500,000.** Surveyer, Nenniger & Chenevert, 1440 St. Catherine St. W., Montreal, consult. engrs.

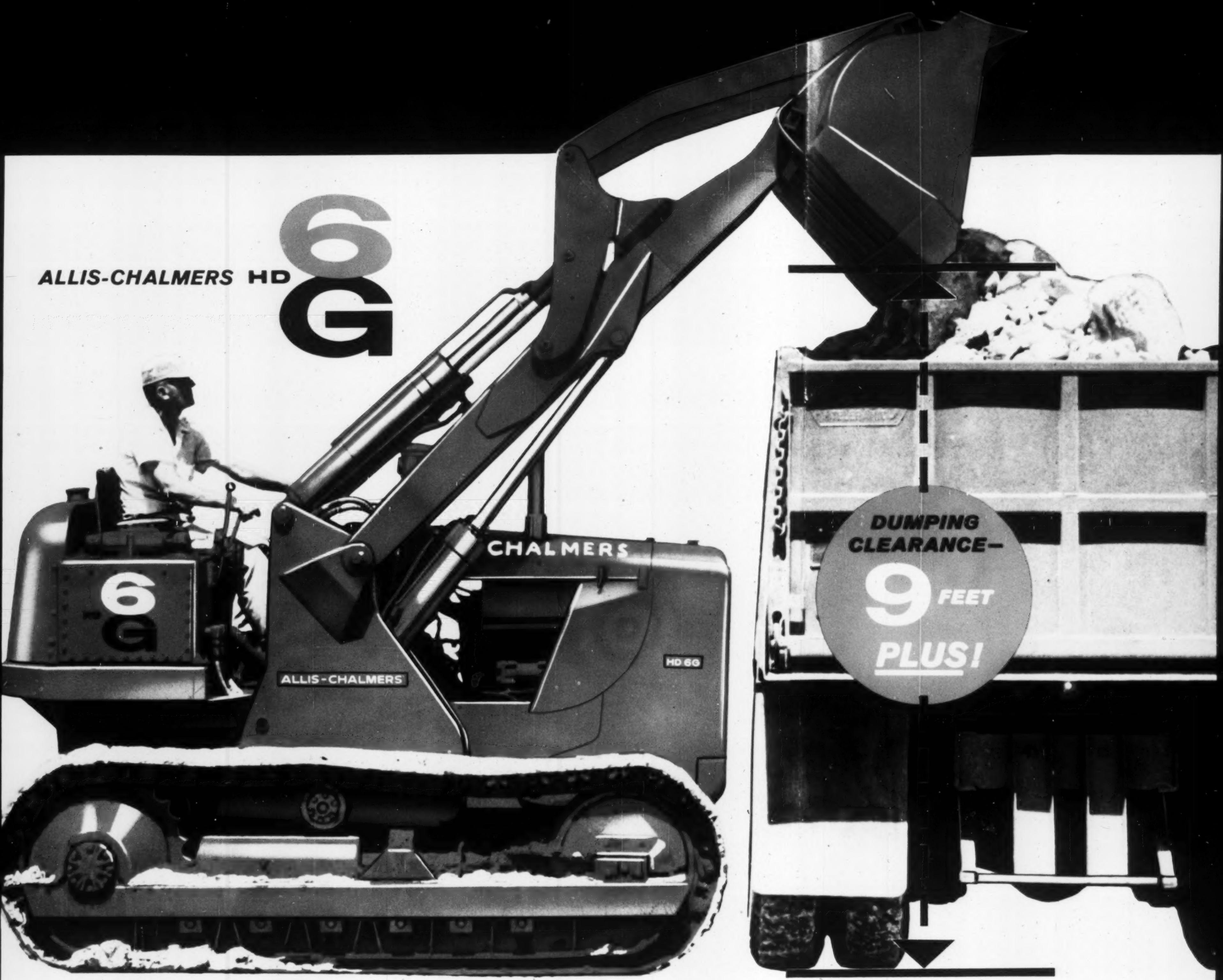
CIRCLE 287 READER SERVICE CARD ➤

NEW SLANT IN TRACTOR SHOVELS

NEW BENEFITS for YOU

- *40° bucket tip-back*
- *Fast reverse to 4.1 mph*
- *Important operator advantages*
- *New "down-slope" visibility*
- *Best reach, best dump height in its class*

ALLIS-CHALMERS HD 6G


CHALMERS
6G
ALLIS-CHALMERS
HD 6G
DUMPING CLEARANCE—
9 FEET
PLUS!

GIVES YOU EXTRA DUMP **HEIGHT** WITH A BONUS IN **REACH** . . . LOADS BIGGEST TRUCKS EASILY

- 72 net engine hp
- 21,000 lb
- 1½ cu yd general purpose bucket

With as much as a foot more dumping height than the maximum for ordinary tractor shovels, the 6G reaches 'way out at any height to dump over the center of big, sideboarded, 12-yd trucks . . . places each bucketful just where you want it. This height-and-reach combination pays off other ways, too — building stockpiles or loading out over the sides of excavations.

AND THAT'S ONLY THE BEGINNING . . .

HERE'S EVERYTHING YOU NEED FOR

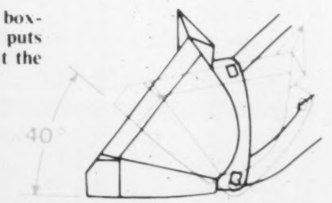
BIG PRODUCTION

21,500 LB
BREAK-OUT
FORCE
HD 6G
ALLIS-CHALMERS

BREAKOUT

action of the new 6G puts a 10¾-ton force at the cutting edge as the heavy-duty bucket tips back 40° on its curved bottom. This tremendous pry-out is far more effective than the fixed leverage of an ordinary, shoe-type bucket bottom. The 6G easily digs, lifts and loads stubborn boulders, stumps, pavement slabs or any hard-packed material with effortless speed—gets *more* digging-loading work done *faster* than any tractor shovel near this size.

40° tip-back on curved, box-section bottom of bucket puts 21,500-lb breakout force at the cutting edge.

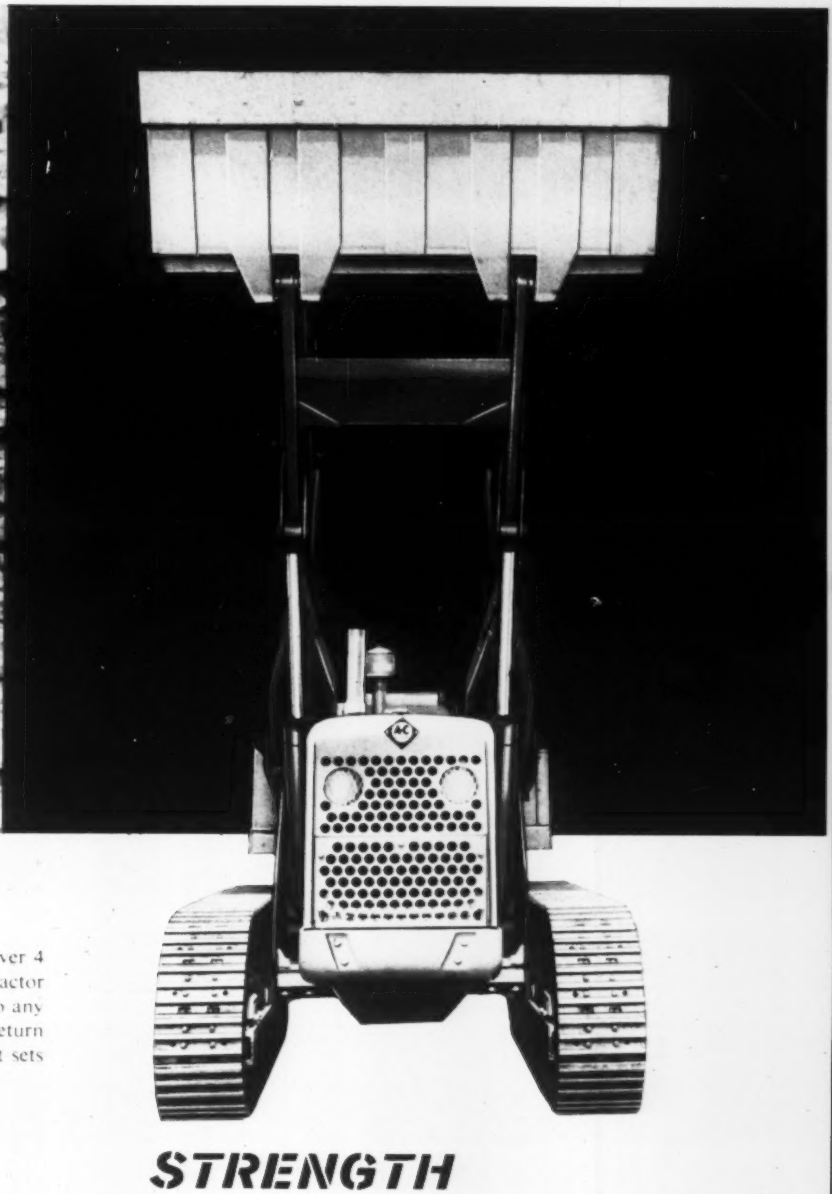


BALANCE

of the new 6G is outstanding, with nearly seven feet of track on the ground to distribute tractor and load weight for safe handling at big-production speeds. Engineered and built from track to stack as a tractor shovel—not just a tractor with a bucket—the 6G has stability and strength to lift heaviest loads safely and surely, right to the top without wobble or wasteful spilling. Dependable, heavy-duty hydraulics provide the precise control necessary to hold finish grades.

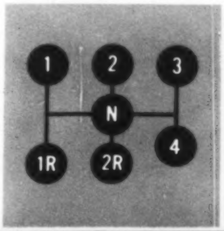
. . AT LOW COST

ALLIS-CHALMERS
HD 6G
4.1 MPH
REVERSE



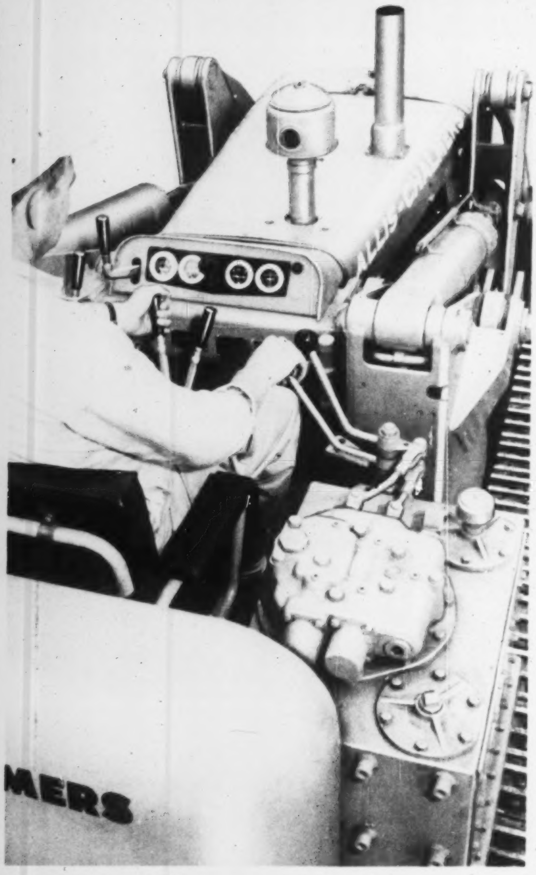
SPEED

. . . the new 6G can back away with a load at over 4 mph! You choose the *right speed* for every tractor shovel function – shift briskly from high reverse to any forward speed with a single lever. Bucket lift and return is perfectly controlled – a smooth, swift cycle that sets a fast pace on any job.



STRENGTH

. . . "In-Line" booms and linkage are twin towers of solid-steel strength in the new 6G. They're straddle-mounted on wide-spaced pivots in the shovel side frames for no-sway stability in all positions. Lift and dump cylinders operate in exactly the same line, put the 6G's hydraulic power to work "straight from the shoulder."



ALLIS-CHALMERS HD 6G

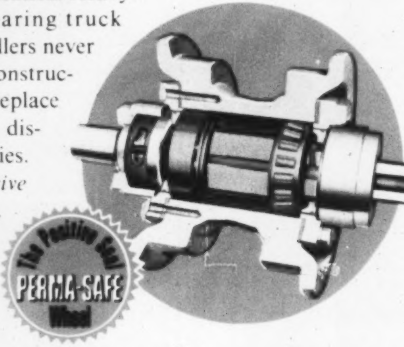
New Operating ease and service simplicity mean extra production . . . long life

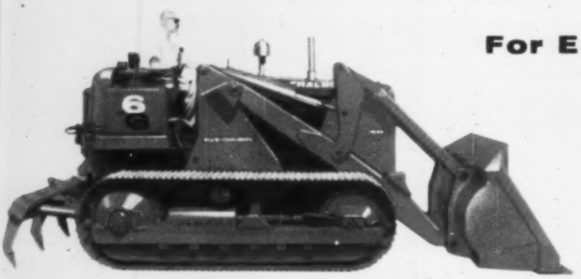
Roomy Comfort. Deck-level entrance gangway . . . nine-position, foam-padded seat . . . easy-to-reach controls . . . plenty of leg room.

Clean-Sweep Visibility. Down-sloping, tapered cowl and hood . . . clear view of bucket . . . slim fuel tank, stub fenders for rearward vision.

"Extras" are Standard Equipment. Push-button starter on instrument panel . . . decelerator pedal . . . automatic bucket level indicator.

Certified Permanent Lubrication. Heavy-duty, tapered roller bearing truck wheels, idlers, support rollers never need greasing. *True* unit construction lets you remove and replace any major part without disturbing adjacent assemblies. *Both these features exclusive* in this size tractor shovel.





For Extra Return on Your Investment . . .
Quick-Change Attachments

The 6G's 1½-yd general purpose bucket is ideal for most digging, handling and loading jobs. Add bucket teeth and rear-mounted hydraulic ripper and you've got a machine that's built for business at *both* ends in extra-tough work. Interchangeable front-end attachments mount in minutes, quickly adapt your tractor shovel to do special jobs faster and at lower cost.

Count on your Allis-Chalmers dealer for operating advice, maintenance suggestions and 'round-the-clock service — when and where you need it. He'll help you get top performance and long life from your 6G or any other Allis-Chalmers machine you own . . . with genuine, factory-quality, regular production parts — made for the machine, best for the job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with

ALLIS-CHALMERS

A-C
ALLIS CHALMERS

. . . power for a growing world

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Mass., Hingham**—BOILER CONTROLS—BA 9/29—Dist. P. Wks. Office, IND, Bldg. 37, 495 Summer St., Boston, rehabilitation boiler controls, U. S. Naval Ammunition Depot, NBy-27256, Spec. No. 27256/59. Under $10,000. CD 9/8/58, under Public Buildings.

R. I., Providence—BA 9/29—City, City Clerk's Office, City Hall, imprv. Main Sewage Pumping Station, Fields Point, Everett St. and Allens Ave. $227,800. Plans deposit $25. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. CD 9/1.

CONNECTICUT—BA 9/21—State Highway Comr., 170 Douglas St., Hartford.

Canton—hot b. conc. 5,521 lin. ft. River Rd. $150,000. Plans deposit $13.60.

Colebrook—hot b. conc. 550 lin. ft. Rte. 8, sightline imprv. at inter. Riverton Rd., $10,000. Plans deposit $3.70.

East Lyme and Waterford—highway illumination Connecticut Tpk., Rte. 95, Fed. Aid Proj. I-95-3(10)88. Plans deposit $3.70.

Greenwich—766 lin. ft. drainage imprvs. Connecticut Tpk. Proj. 215-78. Plans deposit $3.

Ridgefield—drainage, 1,860 lin. ft. Rte. 35. Proj. 117-96. Plans deposit $5.20.

Windsor Locks—2,150 lin. ft. drainage, Elm and S. Elm Sts. Proj. 165-62. Plans deposit $4.70.

1,948 lin. ft. drainage, Wedemeyer, Suffield Sts., Proj. 165-70. Plans deposit $4.95.

HEAVY CONSTRUCTION—LB & CA

† **S. Rosenthal & Son, Inc.**, P.O. Box 390, Cambridge, Mass., LB **$93,922**, Schedules A&B, paint and repair shops, Caribou Air Force Station, Caribou, Me. and Stony Brook Air Force Station, Chicopee Falls, Mass., ENG-19-016-60-9, MAINE and MASSACHUSETTS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Sept. 3. CD 9/1.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 9/9.

J. F. White Contg. Co., Box 358, Westwood, Mass., LB **$1,877,000**, est. $2,167,124, substructure bridge over Merrimac River, Rte. 495, I-495-6 (12) 81, Lawrence. CD 8/28.

D. F. Pesce Co., 265 Carter St., Chelsea, Mass., CA **$229,201**, est. $200,000, hy. and sidewalk constr., CHELSEA, MASS. City, City Hall, Chelsea, Mass. CD 9/8, under CA.

CONNECTICUT—State Highway Comr., 170 Douglas St., Hartford. Bids opened 9/8.

John DeMichiel & Bros., Inc., 58 High St., Torrington, Conn., LB **$224,808**, b. conc. paving 4,983 lin. ft., single span rolled beam bridge over Hollenbeck River Relocation Rte. 63, Fed. Aid Projs. S-57-(2) and ER-13, Projs. 21-68 and 21-69, Canaan and Cornwall. CD 8/19.

BUILDINGS—LB & CA

Troy Laundry Machine, Div. American Machine & Metals, Inc., 48 Thomas St., East Moline, Ill., CA **$125,166**, M 827 Contr. 2, LAUNDRY, State Hospital, MONSON, MASS. Commonwealth of Mass., Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids July 15. CD 6/23.

Koll Morgen Optical Co., 247 King St., Northampton, Mass., rejected bids July 17, factory addn., King St., NORTHAMPTON, MASS. LB **$110,000**. Will re-advertise. CD 7/22, under LB.

Joseph Aldo, Linwood St., Milford, Conn. Owner Builds, **$490,000**, 49 HOUSES, Linwood St., MILFORD, CONN. CD 5/23/56.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
September 25 Pennsylvania
STREETS AND ROADS
September 25 Pennsylvania

Pa., Pittsburgh—BA 9/22—Comrs. Allegheny Co., Room 410, Court House, imprv. Wall Ave. and reconstruction Dirty Camp Run Bridge, Painters Run Rd., new pipe culvert (replacing Bridge 11, Painters Run). Plans deposit $5. CD 12/15/43.

D. C., Wash.—BA 9/23—D. C. Govt., Dpt. Hys., 499 Pa. Ave. N.W., paving North Capitol St., Michigan Ave. to Harewood Rd. Fed. Aid Proj. F 7 (7). CD 9/5/58.

NEW JERSEY—BA 9/23—State Hy. Comrs., in the Cafeteria, State Highway Office Bldg., 1035 Parkway Ave., Trenton.

Union Co.—grading and paving Green Lane Extension, New Jersey State Teachers College, Union Twp., Contr. No. 2.

underground structures for traffic signal systems at various intersections of New Jersey State Hys., 1959-1960 Contr. No. 1. Plans deposit $15 each. CD 4/18/55.

† **Md., Salisbury**—VORTAC FACILITY, etc.—BA 9/24—Federal Aviation Agency, International Airport, Jamaica, N. Y., relocation conversion of vortac facility, IFB 1-60-71B1.

Pa., Phila.—COLUMBUS SQUARE—BA 9/26—Dpt. Procurement, City Hall Annex, Bid 5068, general construction, Bid 5069, plumbing; Bid 5070, electrical work, development of Columbus Square, 12th and Wharton Sts., for Dpt. Recreation. Plans deposit $10.

† **N. J., Wildwood**—ROAD IMPRV.—BA 9/28—Contracting Officer, Third Coast Guard Dist., Custom House, New York, N. Y., asphalt penetration roads and BZD areas and repairs to existing roads at Electronics Engineering Station, U. S. Coast Guard, IFB-03-3679-60. Bids June 22 rejected. CD 6/4.

Pennsylvania—VISITOR CENTER CYCLORAMA BLDG.—BA 9/29—Supt. Gettysburg National Military Park, Dpt. Interior, Gettysburg, Visitor Center and Cyclorama Bldg., Gettysburg. $850,000. Plans deposit $50. CD 9/31/57.

NEW JERSEY—BA 9/30—State Hy. Dpt., 1035 Parkway Ave., Trenton.

Mercer Co.—reconstr. about 1 mi. Princeton-Hightstown Rd. from Van Hise's Corner to point 200 ft. east of Rabbit Hill Rd., West Windsor Twp. CD 4/18/55.

NEW JERSEY—BA 9/30—New Jersey Highway Auth., 12 Broad St., Second Floor, Red Bank.

Monmouth and Middlesex Counties—concrete pavement at Manasquan and Cheesequake Service areas, Wall Twp. in Monmouth Co. and Borough of Sayreville, Middlesex Co. Plans deposit $5.

BUILDINGS—BA

▲ **Pa., Union City**—SCHOOL—BA 10/6—State Public School Bldg. Authority, 101 S. 25th St., Harrisburg, combined elementary and secondary addn., secondary school renovation, Union City Area Jt. School Board, Proj. 853-660. $1,000,000. Plans deposit $50. Johnson, Gray & Associates, 1017 Commerce Bldg., Erie, archts. CD 5/5/58.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany. Bids opened 9/10.

N. Y.—**John Arborio Inc.**, W. Cedar St., Poughkeepsie, N. Y. LB **$7,851,870.75**, est. $10,064,000 (17 bidders) 9 in. c. conc. pavement variable width 6.31 mi. (access 4.77 mi.) 8 hy. seps. comp. beams, 131.4 ft., 137.8 ft., 123.6 ft., 128.8 ft., 192 ft., 192 ft., 139.5 ft., and 147.8 ft., 2 RR seps. comp. beams 224.7 ft. and 249.7 ft., 7 brs. comp. beams 139 ft., 167 ft., 105 ft., 545 ft., 423.8 ft. and 514 ft., 1 br. rein.-con. box 23.4 ft., Windsor-Deposit, SH 5338, Binghamton-Windsor Pt. 4, SH 5241 Binghamton-Windsor Pt. 3, SH 5148, Windsor Village, Main St., SH 1239, Rte. 17, FARC 59-115, Proj. F-FG 344(25), Broome Co.

N. Y.—**Lake Champlain Development** Corp., P. O. Box 295, Plattsburgh, N. Y. LB **$550,687.66**, est. $687,000, (9 bidders), bit. double surf. treatment 4.54 mi., b. conc. type 1A 0.11 mi., wid'n. existing concrete arch bridge 30 ft. span, Chateaugay-Canadian Line SH 8040 Rte. 374, FARC 59-109, Proj. S-81(2), Franklin Co.,

N. Y.—**Arute' Bros. Inc.**, 560 S. Main St., New Britain, Conn. LB **$3,903,706.25**, est. $5,774,000, (9 bidders), b. conc. pavement Type 1A 5.55 mi. (2.29 mi. access) misc. work 0.02 mi. 4 hy. seps. twin comp. I-beams 3 span 119 ft., 3 span 144.3 ft. and 146.8 ft., 3 span 129.5 ft., 3 span 138.5 ft. and 140 ft., 1 hy. sep. rein.-con. rigid frame twin 1 span 41.8 ft., 1 bridge rein.-con. twin box 42 ft. span, 2 twin comp. I-beam bridges, 3 span 291 ft. and 3 span 262 ft. Interstate Rte. 505 Section 7AB-2 (Pierrepont Manor to Adams) and SH 184 C. R. 107, (C. R. 125, C. R. 112 & C. R. 110, Rte. 81 FISH 59-16 Proj. I-81-3(13)-135, Jefferson Co.,

N. Y.—**Robert C. Kramer**, Main St., Holland, New York LB **$138,891.00**, est. $171,000, (8 bidders), b. conc. 2.09 mi. Youngstown-Olcott Pt. 2 SH 8324 Rte. 18, FARC 59-105, Proj. F-461 (7), Niagara Co.,

N. Y.—**Johnson, Drake & Piper Inc.**, 86 Trinity Place, New York 6, N. Y. LB **$5,336,601.00**, est. $7,410,000, (7 bidders), 9 in. c. conc. 9.48 mi. (5 mi. access) 8 hy. seps. comp. W-F beams 230.2 ft., 135.4 ft., 139.1 ft., 312.1 ft., 121 ft., 119.4 ft., 121.8 ft. and 121.8 ft., 2 rein.-con. twin box bridges 31 ft. and 31 ft., Interstate Rte. 505 (Parish-Jefferson County Line, Pt. 1), Mapleview-Checkered House, SH 9284, Rte. 81 FISH 59-1, Proj. I-81-2(18) 110 and S-522(1), Oswego Co.,

N. Y.—**Cooley Contracting Co.** 446 Second St., Albany, N. Y. (6). LB **$497,325.15**, est. $552,000 (8 bidders), b. conc. 1.91 mi. misc. work 0.01 mi. rein-con. arch bridge 24 ft. span, Barracks Rd., SH 102, Rte. 151 FARC 59-43 Proj. S-497(1), Rensselaer Co.,

N. Y.—**John W. Donovan Const. Corp.**, 20 Seneca St., Cohoes, New York LB **$259,426.00**, est. $264,000, (2 bidders), b. conc. 0.42 mi. raise and rehabilitate exist. 6 span truss bridge, steel truss bridge 1 span 180 ft., Stillwater-Schaghticoke SH 1791, Rte. 67, FARC 59-110, Proj. F-631 (4), Rensselaer and Saratoga Counties,

N. Y.—**Alexander Const. Co. Inc.**, Downsville, N. Y. LB **$524,802.75**, est. $712,000, (10 bdders), b. conc. 6.5 mi. Post Creek Watkins Glen, Pts. 3 and 4, SH 8402, Rte. 414, FARC 59-113, Schuyler Co.,

N. Y.—**Hendrickson Bros. Inc.**, 63 N. Central Ave., Valley Stream, N. Y. LB **$3,473,969.40**, est. $4,016,000, (7 bidders), 9 in. conc. pavement 3.28 mi. misc. work 0.7 mi. (access 0.91 mi.), 4 hy. seps. comp. W-F beams 3 span 166 ft., 3 span 160.5 ft., 3 span 116.6 ft. and 4 span 239.3 ft., 1 hy. sep. plate girder 3 span 199.7 ft., Sunrise Hy. extension (SH 1883 to Springdale Rd.) FASH 59-13, Proj. F-559(12), Suffolk Co.,

N. Y.—**John C. Peterson Construc. Corp.**, 958 Church St., Baldwin, N. Y. LB **$1,148,452.50**, est. $1,444,000, (5 bidders), b. conc. 2.1 mi. misc. work 0.06 mi. Amityville Village Broadway, SH 1633, Huntington-Amityville, Pt. 2, SH 1219, Rte. 110, FARC 59-10, Proj. U-297(5), Suffolk Co.,

N. Y.—**Sea Craft Const. Corp.**, P. O. Box 311, Catskill, N. Y. LB **$267,294.00**, est. $313,000, (4 bidders), b. conc. 1.35 mi., comp. I-beam bridge 2 span 186 ft. Hoagerburgh Hill Rd., Co. Rd., No. 70 (Brunswick Bridge) Co. Br. No. 150, FASS 59-20, Proj. S-527(1), Ulster Co. CD 8/6.

▲ **T. & T. Contracting Corp.**, 4814 Glenwood Rd., Brooklyn N.Y., CA **$5,524,000**, 6 mi. storm sewer in areas of Bellerose and Floral Park, Queens Boro, NEW YORK. President of Queens Boro, Rm. 228, Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. Bids July 22. CD 7/28, under LB.

BUILDINGS—LB & CA

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y., CA **$1,540,000**, general contract PUBLIC SCHOOL 262, Macon St. and Reid Ave., BROOKLYN, N. Y. Bd. Educ. City of New York, Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Aug. 5. CD 8/7, under LB.

K. Field Constr. Corp., 130 Cutter Mill Rd., Great Neck, N. Y., CA **$924,000**, general contract addn. to and modernization of existing PUBLIC SCHOOL 19, South 3rd and Rodney Sts., BROOKLYN, N. Y. Bd. Educ. City of New York, Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Aug. 11. CD 8/14, under LB.

No. Jersey Constr. Co., 131 Winslow Terrace, Glen Rock, N. J., CA **$200,000**, 50,000 sq. ft. PLANT, 2nd to 3rd Aves., HASKELL, N. J. Arrow Metal Product Corp., 3 Ave., Haskell, N. J. A. Gionti, Jr., 167 Belmont Ave., Haledon, N. J., archt.

▲ **Daniel V. Van Campen**, 2540 W. Oxford St., Phila., Pa., CA **$1,252,733**, HIGH SCHOOL, FORT WASHINGTON, PA. Upper Dublin School Auth., Fort Washington, Pa. John S. Carver, 2112 Spruce St., Phila., Pa., archt. Robert E. McLaughlin, 1411 Walnut St., Phila., Pa., engr. CD 4/2/58.

Robert E. Lamb, Inc., 3429 W. Indiana Ave., Phila., Pa., CA **$175,000**, 1 story, masonry, steel L shaped 150x68 ft. and 48x80 ft. WAREHOUSE, PHILA., PA. General Dynamics, Inc., Liquid Carbonic Div., 135 S. LaSalle St., Chicago, Ill. CD 7/20.

▲† **Humphreys & Harding, Inc.**, 1608 New Hampshire Ave. N.W., Wash., D. C., CA **$2,244,695**, WING for Modular Office Occupancy, and WING housing electronic equipment, Goddard Space Flight Center, GREENBELT, MD. National Aeronautics & Space Admin., 1520 H St. N. W., Wash., D. C. Bids Sept. 2. CD 9/4, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
September 23 Louisiana

† **N. C., Fort Bragg**—PAVEMENT—BA 9/23—Base Procurement Office, Pope Air Force Base, resurf. and repair approx. 14,800 sq. yd. airfield pavement. CD 9/9/58.

† **W. Va., Charleston**—APPROACH LIGHTING SYSTEM—BA 9/23—Federal Aviation Agency, International Airport, Jamaica, N. Y., steel superstructure for approach lighting sys., Kanawha County Airport, IFB 1-60-67B1.

HEAVY CONSTRUCTION—SLC

Tennessee—TELEPHONE LINES—Ardmore Telephone Co., Ardmore, soon lets contract 124 mi. telephone lines, Giles and Lincoln Counties. $100,000. Ladd Eng. Co., P.O. Box 29, Fort Payne, Ala., consult. engr.

HEAVY CONSTRUCTION—LB & CA

▲† **Blount Constr. Co.**, 79 Commerce St., Montgomery, Ala., LB **$1,893,432**, (13 bidders), Langley Bomarc Facilities, Flight B, ENG-44-110-50-1, LANGLEY AIR FORCE BASE, VA. U. S. Eng., foot of Front St., Norfolk, Va. Bids Sept. 2. CD 7/29.

† **Merritt Dredging Co.**, 447 Edgewater Park Rd., Charleston, S. C., LB **$317,067**, est. $277,157, maintenance dredging, Sampit River, Upper Winyah Bay and Eastern Channel, Georgetown Harbor, ENG-38-081-60-01, SOUTH CAROLINA. U. S. Eng., P. O. Box 905, Charleston, S. C. Bids Sept. 2.

GEORGIA—Georgia Rural Roads Auth., 2 Capitol Square, Atlanta. Bids opened 9/4.

Ga.—**M. R. Woodall Co., Inc.**, 1594 Lakewood Ave. S. W., Atlanta, Ga., LB **$92,416**, grading, paving 3.473 mi. Dennis Creek Rd., beginning SR 208 in Talbotton and extending S. W. Supp. 2 RR, PR 1212 (2), Talbot Co. CD 8/26.

GEORGIA—State Hy. Dpt., 2 Capitol Square, Atlanta. Bids opened 9/4.

J. Nick Jordan, 716 Parkway Drive N. E., Atlanta, Ga., LB **$132,321**, bridge at Seaboard Airline R.R., Rincon and approx. 1,030 ft. paved approaches, bridge culvert and 49 ft. paving approx. 1.9 mi. south of Railroad Bridge located on Savannah-Springfield Rd. State Rte. 21 BA (4) SP 833-A(9), Effingham Co. CD 8/25.

▲† **T. L. James & Co., Inc.**, Box 531, Ruston, La., CA **$1,095,677**, airfield paving, Barksdale Air Force Base, Inv. 60-1, SHREVEPORT, LA. U. S. Eng.,

P. O. Box 867, Little Rock, Ark. Bids July 22. CD 7/27, under LB.

BUILDINGS—LB & CA

▲ **George A. Fuller Constr. Co.**, Munsey Bldg., Wash., D. C., CA Over **$2,000,000**, 3 story PLANT addn., FALLS CHURCH, VA. Melpar, Inc., 3800 Arlington Blvd., Falls Church, Va. Bids Aug. 6. CD 8/5.

W. H. Belanga Corp., 619 W. 25th St., Norfolk, Va., CA **$626,480**, 1 story, 112,000 sq. ft. MANUFACTURING PLANT, NORFOLK, VA. General Mower Corp., 1670 Jefferson Ave., Buffalo, N. Y. Lublin, McGaughy & Assoc., 220 W. Freemason St., Norfolk, Va., archts.

▲ **Seabright Constr. Co.**, 42 and Wood Sts., Wheeling, W. Va., CA, FUMARIC ACID PLANT, MOUNDSVILLE, W. VA., Allied Chemical Co., 61 Broadway, New York 6, N. Y.

Daniel Constr. Co., 429 N. Main St., Greenville, S. C., CA Est. **$450,000**, BANK, GREENVILLE, S. C. Citizens & Southern National Bank, 429 N. Main St., Greenville, S. C.

Daniel Constr. Co., 429 N. Main St., Greenville, S. C., CA Est. **$500,000**, WAREHOUSE, SPARTANBURG, S. C. Community Cash Stores, Spartanburg, S. C. CD 9/9.

▲ **Massell Enterprises**, 40 Pryor St. S. W., Atlanta, Ga., CA Est. Over **$5,000,000**, 22 story, 900,000 sq. ft. MERCHANDISE MART, ATLANTA, GA. Downtown Mart, Inc., 40 Pryor St. S. W., Atlanta, Ga. CD 9/19/58.

▲ **C. A. Kendrick**, 128 W. Solomon St., Griffin, Ga., CA **$1,300,000**, SHOPPING CENTER, FOREST PARK, GA., Clayton Plaza, Inc., P. O. Box 6123, Atlanta, Ga.

Frank M. Flanders & Co., P. O. Drawer 89, Swainsboro, Ga., LB **$408,990**, girls DORMITORY, STATESBORO, GA. State Bd. Regents, 244 Washington St. S. W. Atlanta, Ga. Bids Aug. 27. CD 7/13.

▲ **A. B. Newton & Co.**, Vidalia, Ga., CA **$1,071,848**, low rent HOUSING, incl. 124 dwellings units and community bldg. ALA-48-4, DECATUR, ALA. Housing Auth., 1701 Locust St., Decatur, Ala. Bids Aug. 19. **(Correction**—project location). CD 9/9, under Ga., Decatur.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
September 22 Indiana
STREETS AND ROADS
September 29 Ohio

† **Michigan**—BA 9/23—Contracting Officer, U. S. Forest Service, 710 N. Sixth St., Milwaukee 3, Wis., 2.54 mi. road near Marenisco, IFB 17-60-1.

WISCONSIN—BA 9/29—State Hy. Comm., State Office Bldg., Madison.

Columbia Co.—Structure B-11-21, West County Line-Portage Rd. (Fox Glen Sect.), S. T. Hy. 33, Contr. 2, Proj. T 035-1(12). Plans deposit $2.

Structures B-11-30 and B-11-33, Lake Delton-Madison Rd. (S.T.H. 33-Wisconsin River Sect.), Interstate Hy. 90, Contr. 3, Proj. I-90-2(18) 105. Plans deposit $3.

Structures B-11-31 and B-11-32, Lake Delton-Madison Rd. (S.T.H. 33-Wisconsin River Sect.), Interstate Hy. 90, Contr. 4, Proj. I-90-2(18) 105. Plans deposit $2.

Structures B-11-34 and B-11-35, Lake Delton-Madison Rd. (S.T.H. 33-Wisconsin River Sect.), Interstate Hy. 90, Contr. 5, Proj. I-90-2(18) 105. Plans deposit $3.

Dane Co. structures B-13-95, 96, and 97, Lake Delton-Madison Rd. (S.T.H. 190-U.S.H. 151 sect.), Interstate Hy. 90, Contr. 2, Proj. I-90-2(15) 131. Plans deposit $2. CD 12/9/57.

Structures B-13-98, 99 and 100, Lake Delton-Madison Rd. (S.T.H. 19-U.S.H. 151 Sect.), Interstate Hy. 90, Contr. 3, Proj. I-90-2(15) 131. Plans deposit $4. CD 12/9/57.

Green Co.—structures B-23-23, B-23-24 and B-23-25, Monticello-New Glarus Rd., S.T. Hy. 69, Contr. 3, Proj. T 032-1(7). Plans deposit $1.

Kenosha and Racine Counties—Structure B-51-45, S.T.H. 83-S.T.H. 43 Rd., Contr. 1, Proj. T 0-0-5), R-RD-5(1). Plans deposit $1. CD 7/27/56.

Milwaukee Co.—Structure B-40-81, East-West Expressway (Hawley Rd. overpass), Interstate Hy. 94, Contr. 1, Proj. I-94-4(28) 305. Plans deposit $2. CD 12/9/57.

WISCONSIN—BA 9/29—State Hy. Comm., State Office Bldg., Madison.

Columbia Co.—base course 4.885 mi. Lake Delton-Madison Rd. (C.T.H. CS-C.T.H. V), Interstate Hy. 90, Contr. 1, Proj. I-90-2(17)117. Plans deposit $2.

grade and subbase 3.448 mi. Lake Delton-Madison Rd. (S.T.H. 33-Wisconsin River Sect.), Interstate Hy. 90, Contr. 2, Proj. I-90-2(18)105. Plans deposit $9.

grade and subbase 2.476 mi. Lake Delton-Madison Rd. (S.T.H. 33-Wisconsin River Sect.) and West County Line-Portage Rd. (Fox Glen Sect.), Interstate Hy. 90 and S.T. Hy. 33, Contr. 1, Projs. I-90-2(18)105 and T-035-1(12). Plans deposit $8.

Dane Co.—base course 6.735 mi. Lake Delton-Madison Rd. (C.T.H. V-U.S.H. 151 Sect. and Holland overpass approaches), Interstate Hy. 90, Contr. 1, Projs. I-90-2(19)126 and IG-90-2(35)130. Plans deposit $2.

grade and subbase 2.251 mi. Lake Delton-Madison Rd. (S.T.H. 19-U.S.H. 151 Sect.), Interstate Hy. 90, Contr. 1, Proj. I-90-2(15)131. Plans deposit $9.

base course 4.196 mi. Lake Delton-Madison Rd. (C.T.H. CS-C.T.H. V), Interstate Hy. 90, Contr. 2, Proj. I-90-2(17)117. Plans deposit $1.

Door Co.—single aggregate bit. surf. 9.02 mi. Egg Harbor-Ephraim and Sister Bay-Ellison Bay Rds., S.T. Hy. 42, Contr. 1, Projs. T-01-6(18) and T-04-31(10).

Green Co.—grade and subbase 5.682 mi. Monticello-New Glarus and S.T.H. 69-Monticello Rds., S.T. Hys. 69 and 39, Contr. 1, Projs. T 032-1(7) and T 0435(6). Plans deposit $9.

base course 5.682 mi. Monticello-New Glarus and S.T.H. 69-Monticello Rds., S.T. Hys. 69 and 39, Contr. 2, Projs. T 032-1(7) and T 0435(6). Plans deposit $2.

Iowa Co.—base course 3.336 mi. Linden-Mineral Point Rd., S.T.Hy. 39, Contr. 2, Proj. T 0360(6). Plans deposit $1.

Kenosha Co.—b. conc. 3.636 mi. S.T.H. 75-U.S.H. 45 Rd., C.T. Hy. K, Contr. 1, Proj. S 0843(7). Plans deposit $1.

Milwaukee Co.—thermoplastic pavement marking S.T.H. 100 and U.S.H. 41 intersections, Contr. 1, Sign Proj. I 205, Aux. 020.6.

Pierce Co.—base course 8.429 mi. Ellsworth-Waverly and Ellsworth-Martell Rds., S.T. Hy. 72 and U.S. Hy. 63, Contr. 2, Projs. S 075(9) and S 0289(4). Plans deposit $2.

Polk Co.—grade and subbase 6.391 mi. South County Line-Osceola Rd., S.T. Hy. 35, Contr. 1, Proj. F 028-3(12). Plans deposit $8.

Rock Co.—grade, base and b. conc. 0.102 mi. Dearborn St., City of Beloit, U. S. Hy. 51, Contr. 1, Proj. T 05-1(14). Plans deposit $2.

Walworth Co.—grade, subbase, base and b. conc. 4.022 mi. Williams Bay-Lake Geneva Rd., S.T. Hys. 36 and 50, Contr. 1, Proj. F 064-1(9). Plans deposit $7.

Washington Co.—grade, base and b. conc. 8.442 mi. U.S.H. 41-U.S.H. 45 and U.S.H. 45-East County Line Rds., S.T. Hy. 60, Contr. 1, Projs. S 0148(5) and T 0148(5). Plans deposit $4.

BUILDINGS—BA

† **Mich., Battle Creek**—CANTEEN, etc.—BA 10/27—Veterans Admin., Munitions Bldg., Wash., D.C., Canteen and Library Bldg. 136, underground distr. sys. and heating controls for Bldg. 82, 83 and 84, Veterans Administration Hospital.

BUILDINGS—SLC

Ind., Fort Wayne—SHOPPING CENTER—Norbert Knapke (Realtor), 935 Lincoln Bank Tower, soon lets contract 1 story, 41,000 sq. ft., brick, block, masonry shopping center, parking, W. State Blvd. between St. Mary and Jessie Aves. $700,000. Noren & Didier, 2707 S. Calhoun St., engrs. A. M. Strauss, 600 Stearns Bldg., archt. CD 4/17.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield.

Contracting & Material Co., 1235 Dodge St., Evanston, Ill., and **Kenny Constr. Co.**, 3220 Kenny St., Skokie, Ill., CA **$2,184,142**, paving and walls 0.89 mi. Northwest Expressway, Chicago, Cook Co. Bids Aug. 24. CD 8/27, under LB.

WISCONSIN—State Hy. Comm., State Office Bldg., Madison. Bids opened 9/8.

Engineering & Construction, Brookfield, Wis., LB **$585,427** (11 bidders), grade, base and concrete pavement and Structures B-40-140 and 141, 0.057 mi. West Silver Spring Dr. (Sherman Blvd. and McGovern Park Rd.), Contr. 1, Projs. USG 0822(6) and US 0822(7), Milwaukee Co. CD 8/20.

WISCONSIN—State Hy. Comm., State Office Bldg., Madison.

Cancelled bids to have been opened Sept. 8: base course 5.119 mi. S.T.H. 154-C.T.H. K Rd., C.T. Hy. G, Contr. 2, Proj. S 0220(6), Sauk Co. CD 8/20.

BUILDINGS—LB & CA

▲ **Mesta Machine Co.**, P. O. Box 1466, Pittsburgh 30, Pa., CA, TWO-STAND MILL for finish temper on cold-rolled strip, for tine plant, GARY, IND. United States Steel Corp., 71 Broadway, New York 6, N. Y. CD 3/19/56.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
September 25 Minnesota

IOWA—BA 9/22—State Hy. Comm., Ames.

Adair and Cass Counties—concrete slope protection, at various locations on Interstate Rte. 80 from US 71 east to east line Sec. 1-77-33, I-80-2(13)64.

Adair, Dallas and Madison Counties—concrete slope protection at various locations on Interstate Rte. 80 from west line Sec. 6-77-32 easterly to US 6, I-80-2(14)82.

Adams Co.—6 rein.-con. box culverts and extensions at various locations on Farm to Market road from W¼ corner Sec. 10-72-35 north to NW corner Sec. 3-73-35, SN-1717.

8 x 8 x 51 ft. rein.-con. box culvert on Farm to Market road in SW¼ Sec. 25-73-34, SN-1757.

Black Hawk Co.—2 rein.-con. box culverts and extensions at various locations on relocation of US 20 from SW corner Sec. 5-88-13 east to SE corner Sec. 4-88-13, FN-1101, all foregoing under $88,000 each.

Cedar Co.—17 rein.-con. box and pipe culverts and extensions, also triple 15 ft.-18 ft.-15 ft. x 12 ft. rein.-con. box culverts, also 30 x 215 ft. 5 in. pretensioned prestressed concrete beam bridge, also 28 x 215 ft. 5 in. pretensioned prestressed concrete beam bridge, also 24 x 215 ft. 5 in. pretensioned prestressed concrete beam bridge, at various locations on Interstate Rte. 80 from W¼ corner Sec. 11-79-4W easterly to Cedar River bridge, I-80-7(4)262, over $88,000.

Cherokee Co.—520 ft. welded wire retard and berm repair on Iowa 31 at Silver Creek crossing along south line SE¼ Sec. 4-90-40, FN-744.

Crawford Co.—4 rein.-con. box culverts and extensions at various locations on Farm to Market road from W¼ corner Sec. 27-82-41 northeasterly to near S¼ corner Sec. 8-82-40, S-1096(1).

20 x 67.5 ft. prestressed concrete beam bridge on Farm to Market road near E¼ corner Sec. 10-84-39, SN-2852.

Fremont Co.—20 x 30 ft. prestressed concrete beam bridge with flume on relocation of Farm to Market road near center Sec. 18-69-42, SN-513.

rein.-con. box culvert extension on Iowa 145 in SE¼ Sec. 36-70-43, FN-561.

Guthrie Co.—2 rein.-con. box culverts on Farm to Market road between Sec. 13 and 14-81-32, SN-2612.

Harrison Co.—46 rein.-con. box and pipe culverts and extensions, also 2 rein.-con. slab culverts, also remodel 40 x 45 ft. concrete arch bridge, at various locations on US 30 out of Missouri Valley northerly to Woodbine, FN-14.

Iowa Co.—24 x 125 ft. continuous concrete slab bridge, or 24 x 125 ft. continuous I-beam bridge on Farm to Market road near center Sec. 23-81-12, SN-1385.

Jasper Co.—34 rein.-con. box culverts, extensions, and rein.-con. pipe culverts, also 24 x 84 ft. I-beam bridge, also 24 x 41 ft. 4 in. I-beam bridge, also 24 x 41 ft. 4 in. I-beam bridge, at various locations on Farm and Market road from NW corner Sec. 36-78-21 east to Monroe, SN-2772.

Keokuk Co.—8 rein.-con. box and corrugated metal pipe culverts and extensions, SN-2851.

Monona Co.—slope protection at various locations on Interstate Rte. 29 from west of Whiting northerly to Woodbury County Line, I-29-6(4)122 (I-03-6(4)).

Montgomery Co.—20 x 105 prestressed concrete beam bridge on Farm to Market road near S¼ corner Sec. 14-73-36, S-358(3).

24 x 100 ft. continuous concrete slab bridge on Farm to Market road near S¼ corner Sec. 1-71-38, S-1212(3), all foregoing under $88,000 each.

Polk Co.—4 span steel girder subway on US 6 and 65 at Fort D.D.M. and S. Railway and C.R.I. and P. Railroad (on Euclid Ave. in Des Moines), UG-206(16), over $88,000.

concrete slope protection at 10 locations on Interstate Rte. 35 from point in SE¼ Sec. 17-79-25 easterly to point in Sec. 18-79-23, I-35-2(4)77.

Scott Co.—24 rein.-con. box and pipe culverts and extensions at various locations on Iowa 22 out of Blue Grass east to point near N¼ corner Sec. 6-77-3E, FN-217.

concrete slope protection at various locations on Interstate Rte. 80 from Cedar County line easterly to US 61, I-80-8(8)283.

Shelby Co.—24 x 100 ft. continuous concrete slab bridge on Farm to Market road near south corporation line of Earling, SN3-02, all foregoing under $88,000 each.

Webster Co.—24 x 417 ft. continuous I-beam bridge on Farm to Market road at Des Moines River crossing in Lehigh, SN-292.

4 rein.-con. box and pipe culverts, also twin 30 x 407 ft. post-tensioned prestressed concrete beam bridge, also, twin 30 x 155 ft. pretensioned prestressed concrete beam overhead, also 30 x 215 ft. continuous concrete girder overhead, at various locations on relocation of US 169 and Iowa 5 from US 20 northerly to Iowa 5, F-FG-422 (3), all foregoing over $88,000 each.

24 x 175 ft. continuous I-beam bridge on Farm to Market road near S.W. corner Sec. 19-90-30, SN-911.

Winneshiek Co.—triple 18 x 12 x 36 ft. rein.-con. box culvert on Farm to Market road in SW¼ Sec. 9-99-SW, SN-2833.

Woodbury Co.—twin 10 x 10 ft. rein.-con. box culvert on Farm to Market road near N¼ corner Sec. 23-86-43, SN-1609.

concrete slope protection at 3 locations on Interstate Rte. 29 in Sioux City between the Floyd River and the Combination Bridge Interchange, I-IG-29-6(1)143.

concrete slope protection on Interstate Rte. 29 at C. and N.W. Railroad crossing in Sec. 13-88-48, I-IG-29-6(1)143.

concrete slope protection at 2 locations on Interstate Rte. 29 in Sioux City from Combination Bridge Interchange westerly to the South Dakota State line, I-29-8(3)151, all foregoing under $88,000 each. John G. Butter, Ames, ch. engr.

IOWA—BA 9/22—State Hy. Comm., Ames.

Adams Co.—grading 1.975 mi. Farm to Market road from S¼ corner SW¼ Sec. 25-73-34 north 1.0 mi., also on west line Sec. 1-73-34, SN-1757.

Audubon Co.—grading 3.954 mi. Farm to Market road from N.W. corner Sec. 22-80-34 south to Iowa 44, SN-1724.

Black Hawk Co.—grading 2.009 mi. on relocation of US 20 from S.W. corner Sec. 5-88-13 east to S.E. corner Sec. 4-88-13, FN-1101.

Buchanan Co.—surf. 0.252 mi. Farm to Market road in Town of Quasqueton, SN-130.

surf. 2.001 mi. Farm to Market road from N.W. corner Sec. 28-89-7W south to US 20, FM-347.

surf. 2.203 mi. Farm to Market road from S¼ corner SW¼ Sec. 8-90-9 north, west and north to N.W. corner Sec. 5-90-9, SN-2825.

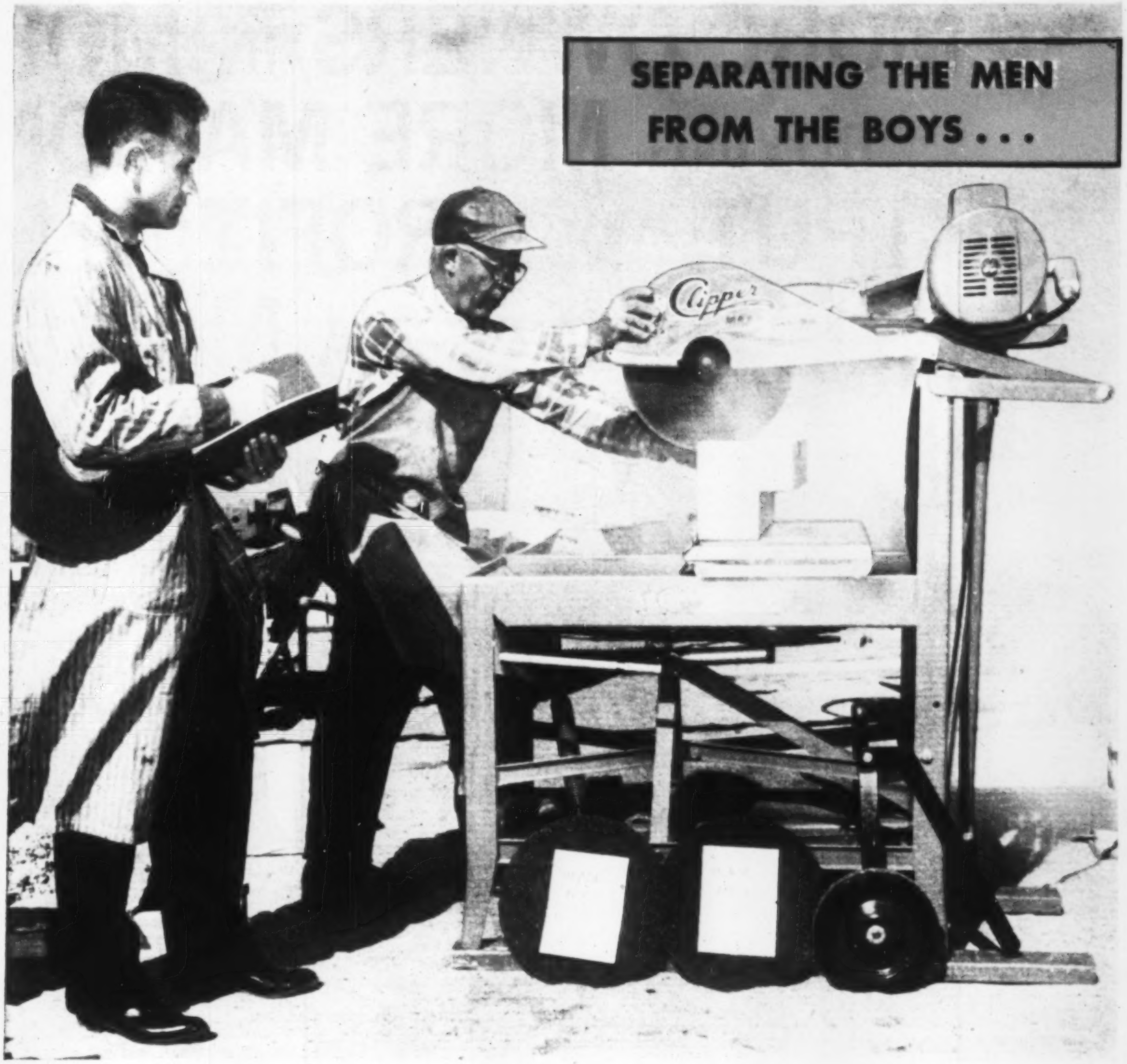
Buena Vista Co.—maintenance sand and resurf. in stockpiles in maintenance yard in Storm Lake, M-3679, all foregoing under $88,000 each.

Cedar Co.—grading 8.087 mi. Interstate Rte. 80 from point near W¼ corner Sec. 11-79-4W easterly to the Cedar River Bridge in Sec. 13-79-3W, I-80-7(4)262. Over $88,000.

Crawford Co.—maintenance sand and resurf. in stockpile on right of way near west Jct. of US 30, US 59 and Iowa 141, M-3680.

(Continued on page 298)

SEPARATING THE MEN FROM THE BOYS . . .



In most every field a boy is often sent to do a man's job because it costs a little less at first. In every case, experience and stamina are finally needed to get the job done faster – and at lower cost.

It's the same with masonry cutting blades. There's a lot of "boy" blades being sent to do a man-sized cutting job, but there's one sure way of separating the two – put them to the test!

For your "men-from-the-boys" test, call your nearest Clipper Factory Trained Representative. He's on call day or night with just one job: serving your masonry and concrete cutting needs with Premium Quality Diamond, Break-Resistant and Abrasive Blades. He'll conduct an eye-opening "separation" test right on your job, without cost or obligation, and will UNCONDITIONALLY GUARANTEE that man-sized Clipper Blades, will out-cut . . . out-perform . . . and out-last any other blade.

For FREE TRIAL or DEMONSTRATION on your job, of a Clipper SUPERMATIC Masonry Saw—or Clipper Concrete Saw, call collect Today.

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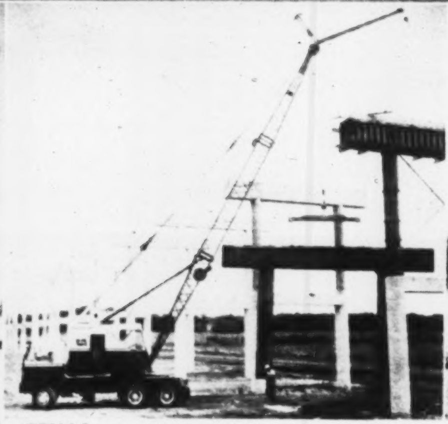
CIRCLE 295 READER SERVICE CARD **CIRCLE 296 READER SERVICE CARD**

MORE OWNERS IN MORE BUYING MORE MARIONS OUTPUT AND PROFIT GO UP GO DOWN WITH A MARION

MARION
111-M

CALIFORNIA — Model 111-M 4½-yd. shovel excavating at Casitas dam site.

MONTANA—A model 35-M ¾ yd. shovel loads shot rock in talc mine.



TEXAS — A 25-ton, 35-M truck crane, with 75' boom and jib combination, removes cement forms on 1 ¾ mile long bridge.

INDIANA — One of two 43-Ms working on a 6-mile by-pass near Indianapolis, this dragline carries a special bucket on 50' of boom.

MINNESOTA — Model 43-M pile-driving with 3,000-lb. hammer on sewer projects.

PLACES ARE
BECAUSE
AND COSTS
ON THE JOB

FLORIDA — With a 2-yd. dragline bucket on 60′ of boom, this Model 362 is dredging at major residential site.

OHIO — Model 43-M 1-yd. backhoe working on sewer project.

TODAY'S MARIONS GIVE YOU MORE IN SUSTAINED, LOW-COST PERFORMANCE

MACHINE	Shovel Capacity	AVAILABLE AS				
		Hoe	Crawler Crane	Truck Crane	Wagon Crane	Special Crane
35-M	¾	Yes	Yes	Yes	Yes	——
37-M	——	——	——	Yes	Yes	——
43-M	1	Yes	Yes	Yes	Yes	——
362	1½	Yes	Yes	——	Yes	Yes
93-M	2½	Yes	Yes	——	——	Yes
101-M	3	——	Yes	——	——	——
111-M	4	——	Yes	——	——	——

ALABAMA—Model 93-M recovers iron ore. It carries a 2-yd. bucket on 60′ of boom.

CONNECTICUT — Killingley Thruway is helped along by this 101-M 3-yd. shovel.

NEW JERSEY — $6-million high school construction job handled by Model 35-M, ¾-yd. backhoe.

MARION POWER SHOVEL CO., MARION, OHIO

A Division of Universal Marion Corporation

You get **MORE** *with* **MARION**

(Continued from page 294)

grading 6.75 mi. Farm to Market road from W¼ corner Sec. 27-82-41 northeasterly to near S¼ corner Sec. 8-82-40, S-1096(1).

surf. 6.959 mi. Farm to Market road from S.W. corner Sec. 13-85-41 east to US 59, SN-1305.

surf. 1.128 mi. Farm to Market road from S.E. corner Sec. 36-83-39 west to US 59, S-2791(1), all foregoing under $88,000 each.

Davis Co.—grading 2.642 mi. Farm to Market road from near W¼ corner Sec. 4-68-13 easterly to S¼ corner Sec. 2-68-13, FM-485.

grading 2.141 mi. Farm to Market road from W¼ corner Sec. 27-70-13 north to point in S½ Sec. 15-70-13. FM-497.

grading 0.459 mi. Farm to Market road from near center Sec. 13-70-14 north to near N¼ corner Sec. 13-70-14, FM-498.

Decatur Co.—surf. 4.429 mi. Iowa 204 from Iowa 2 north to Garden Grove, F-354(1).

Des Moines Co.—surf. 6.466 mi. Farm to Market road from S.W. corner Sec. 6-72-4W east 2½ mi., thence south to S¼ corner Sec. 28-72-4W, SN-1760.

surf. 7.87 mi. Farm to Market road from S¼ corner Sec. 28-72-4W easterly into Mediapolis, SN-586.

Fremont and Page Counties—erosion control 12.182 mi. US 59 from Missouri State line north to Iowa 2, F-472(2).

Guthrie Co.—grading 3.011 mi. Farm to Market road in Sec. 24-81-32, also from S.W. corner Sec. 13-81-32 north to Iowa 141, SN-2812.

grading 1.402 mi. Farm to Market road from S.W. corner Sec. 24-79-31 north, east and north to Iowa 141, SN-2812.

grading 1.402 mi. Farm to Market road from S.W. corner Sec. 24-79-31 north, east and north to point in SW¼ Sec. 13-79-31, SN-2245.

Harrison Co.—maintenance cover aggregate 3 stockpiles on Iowa 127, stockpile on Iowa 301, M-3977.

surf. 2.52 mi. Farm to Market road from W¼ corner Sec. 24-80-41 north to near N.E. corner Sec. 11-80-41, FM-527.

surf. 0.755 mi. Farm to Market road in Sec. 3-80-41, SN-2302, all foregoing under $88,000 each.

shouldering 15.41 mi. US 30 out of Missouri Valley northeasterly to near Woodbine, FN-14, over $88,000.

Henry Co.—surf. 6.992 mi. Farm to Market road from N¼ corner NW¼ Sec. 11-72-7 southerly to US 34 in Sec. 12-71-7W, SN-636.

Ida Co.—maintenance sand and resurf. stockpile in maintenance yard in Ida Grove, M-3681.

Jasper Co.—grading 6.357 mi. Farm to Market road from N.W. corner Sec. 36-78-21 east to Monroe, SN-2772.

Jefferson Co.—surf. 1.524 mi. Farm to Market road from near center Sec. 15-71-9W east to W¼ corner Sec. 13-71-9W, SN-525.

surf. 1.309 mi. Farm to Market road from E¼ corner Sec. 14-71-9W east and south to S¼ corner SE¼ Sec. 13-71-9W, SN-170.

Keokuk Co.—surf. 10.484 mi. Iowa 77 out of Richland northerly to Iowa 92, FN-855.

surf. 1.196 mi. Iowa 304 from Iowa 78 north into Ollie, F 1109(1).

Madison Co.—surf. 5.211 mi. Iowa 307 from US 169 east and southeasterly into East Peru, FN-1110.

Marion Co.—maintenance cover aggregate stockpile on Iowa 156 north of Bussey, M-5721.

maintenance cover aggregate stockpiles on Iowa 181 north of Dallas and south of Jct. with Iowa 92, M-5722.

Marshall Co.—c. conc. pavement and grading 0.336 mi. on frontage road along US 30 in Sec. 13-83-18, FN-881.

Mills Co.—surf. 5.629 mi. Iowa 242 from US 34 north into Silver City, FN-567.

grading 0.133 mi. Farm to Market road on west line NW¼ Sec. 34-73-40, SN-1221.

grading 0.33 mi. Farm to Market road from N.E. corner Sec. 32-72-41 west to Malvern, SN-1563.

Monona Co.—maintenance sand and resurf. 6.2 mi. Iowa 175 from Onawa to Missouri River, 1.4 mi. Iowa 324 from Iowa 175 to Lewis and Clark Park, 2.6 mi. Iowa 372 from Iowa 183 to Preparation Canyon Park, and 6 stockpiles at various locations, M-3682.

guard rail 0.133 mi. Iowa 175 in NE¼ Sec. 8-83-44, FN-426.

Monroe Co.—grading 0.336 mi. Farm to Market road in NE¼ Sec. 23-72-19, SN-1930.

surf. 0.336 mi. Farm to Market road in NE¼ Sec. 23-72-19, SN-1930.

Plymouth Co.—maintenance sand and resurf. in stockpile in maintenance yard in LeMars, M-3683.

Polk Co.—c. conc. 0.202 mi. US 6 at Fort D. D. M. and S. Railway and Illinois Central Railroad on Euclid Ave. in Des Moines, U-206(17), all foregoing under 88,000 each. CD 8/28/58.

Scott Co.—c. conc. wid'n. and b. conc. resurf. and shoulders 5.73 mi. Iowa 22 from west corporation line of Blue Grass east into Davenport, FN-217, over $88,000.

Shelby Co.—surf. 0.633 mi. Farm to Market road from N.W. corner Sec. 9-79-40 south, SN-2669(B).

maintenance cover aggregate in stockpile on Iowa 37, 3 stockpiles on Iowa 39, M-4984.

surf. 0.502 mi. Farm to Market road on east line SE¼ Sec. 3-81-37, SN-305.

surf. 2.002 mi. Farm to Market road along south line Sec. 2 and 3-80-37, FM-437.

surf. 5.671 mi. Farm to Market road from S.W. corner Sec. 36-78-37 north into Elkhorn, SN-584.

surf. 3.628 mi. Farm to Market road from N.W. corner Sec. 11-81-37 south, SN-1274.

surf. 4.634 mi. Farm to Market road from S.W. corner Sec. 6-39-79 north to Iowa 39, SN-1851.

surf. 6.656 mi. Farm to Market road from W¼ corner NW¼ Sec. 16-79-40 northerly to N¼ corner Sec. 9-80-40, except along west line NW¼ Sec. 9-78-40 and along south line SW¼ Sec. 21-80-40, SN-2669(A).

Wapello Co.—grading 2.92 mi. Farm to Market road from Iowa 15 near S.W. corner Sec. 19-73-14 northeasterly to Kirkville, SN-183.

Washington Co.—surf. 2.415 mi. Farm to Market road from Iowa 22 at Wellman north to near W¼ corner Sec. 6-77-8, S-223(2).

Wayne Co.—surf. 3.014 mi. Farm to Market road from S.W. corner Sec. 30-70-23 east to S.E. corner Sec. 28-70-23, SN-2823.

erosion control 4.003 mi. Iowa 55 out of Seymour north to Iowa 2, F-150(4).

grading 0.868 mi. Farm to Market roads in E½ Sec. 1-70-22, SN-1579A.

grading 0.6 mi. Farm to Market road in Sec. 2 and 3-70-22, SN-1579B.

Webster Co.—grading 1.017 mi. Farm to Market road on south line Sec. 19-90-30, SN-911, all foregoing under $88,000 each.

grading 2.207 mi. on relocation of US 169 and Iowa 5 from US 20 northerly to Iowa 5, F-FG-422(3), over $88,000.

c. conc. 0.094 mi. Farm to Market road at Des Moines River crossing in Lehigh, SN-292.

Woodbury Co.—maintenance sand and resurf. in stockpiles in Sioux City and near Sloan, M-3684, all foregoing under $88,000 each. John G. Butter, Ames, ch. engr.

† **Iowa, Waverly**—SUBSTATION TRANSFORMERS—BA 9/24—U. S. Eng., 1709 Jackson St., Omaha, Neb., main substation transformers, Waverly Air Force Station, ENG-25-066-60-29.

† **N. M., Las Cruces**—TELEPHONE CABLE PLANT—BA 9/28—Purchasing & Contracting Div., White Sands Missile Range, telephone cable plant, ORD-29-040-60-6.

▲† **Iowa**—BA 9/29—U. S. Eng., 1709 Jackson St., Omaha, Neb., levee and channel alterations, Unit III, Sect. 2, Little Sioux River, Monona Co., CIVENG-25-066-60-13. CD 9/1.

BUILDINGS—BA

▲ **Minn., Stillwater**—SCHOOL—BA 9/29—Bd. Educ. Independent School Dist. No. 834, 1 and 2 story Senior High School. $2,000,000. Plans deposit $40. Hammel & Green, Inc., 1932½ University Ave., St. Paul, archt. R. D. Thomas & Assocs., 1200 Metropolitan Bldg., Minneapolis, engrs. CD 12/9.

Minn., Minneapolis—CHURCH, etc.—BA 10/15—Trinity Lutheran Church of Minnehaha Falls, 4015 East 52nd St., church and parish house. $400,000. Sovik, Mathre & Assocs., Northfield, archts. Bloom & Oftedal, 623 Sexton Bldg., engrs. CD 8/10/56.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., District Office, 2055 Lilac Dr. North, Golden Valley,

cancelled bids to have been opened Aug. 28, grading, sand-grav. subbase, grav. base and road mixed bit. base Trunk Hy. 101, etc. Maintenance District No. 9, Hennepin Co. CD 8/12.

▲ **Standard Constr. Co.**, 600 First National-Soo Line Bldg., Minneapolis, Minn., CA **$2,804,500**, general contract OFFICE for Northwest Airlines Main Base at Wold-Chamberlain Field, MINNEAPOLIS, MINN. Minneapolis-St. Paul Metropolitan Airports Comn., 2429 University Ave., St. Paul 14, Minn. Bids Aug. 25. CD 8/31, under LB.

▲ **IOWA**—State Hy. Comm., Ames,

Iowa—**Cameron, Joyce & Co.**, 19 South 7 St., Keokuk, Iowa, CA **$1,646,542**, c. conc. 3.962 mi. I-IG-80-4(4) 142, Polk Co.; CA **$649,908**, c. conc. 1.656 mi. I-80-5(7) 146, Polk Co.;

Iowa—**Norris Constr. Co.**, 311 South Wapello St., Ottumwa, Iowa, CA **$702,096**, b. conc. 8.564 mi. Regular F-FG-788 (6), Lee Co. Grand total **$2,998,546**. Bids Aug. 25. CD 8/28.

† **Barnet Brezner**, P.O. Drawer 1030, Alexandria, La., CA **$577,500**, off-site utilities in connection with 700-unit Capehart Housing Project No. 2, ENG-23-028-59-78, FORT LEONARD WOOD, MO. U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo. Bids June 29. CD 7/9, under LB.

† **Building Material, Inc.**, Chamberland, S. D., LB **$165,122**, est. $142,629 (4 bidders), administrative facilities near Fort Thompson, Big Bend Reservoir Proj., ENG-25-066-60-4, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Sept. 2. CD 8/4.

O. R. Burden Constr. Corp., 6702 E. 21st St., Tulsa, Okla., CA **$240,000**, 12 mi. 12 in. crude line relocation, OKLAHOMA. Texaco-Cities Service Pipeline Co., Philtower Bldg., Tulsa, Okla.

City, City Hall, Richardson, Tex., Owner Builds, **$75,000**, c.i. water lines, RICHARDSON, TEX. CD 1/13/58.

Coke County, Rd. Dist. No. 1, Robert Lee, Tex., Owner Builds, **$90,000**, general road work, ROBERT LEE, TEX. CD 6/19.

City, City Hall, San Antonio, Tex., Owner Builds, **$225,000**, misc. streets, asphalt chug-hole patching, SAN ANTONIO, TEX. V. P. Newman, c/o owner, city engr. CD 10/29/57.

Bexar County, Courthouse, c/o Comrs. Court, San Antonio, Tex., Owner Builds, **$225,000**, general county-wide road work, grading, surf. drainage, reworking, SAN ANTONIO, TEX. Tom Coghill, c/o owner, co. engr. CD 1/23.

City Public Service Bd., Box 1777, Navarro and Villita Sts., San Antonio, Tex., Owner Builds, **$150,000**, replacing old 4 in. c.i. water lines, SAN ANTONIO, TEX. CD 9/18.

City Public Service Bd., Navarro and Villita Sts., San Antonio, Tex., Owner Builds, **$500,000**, replacing existing gas line; **$200,000**, electric street lighting extens., SAN ANTONIO, TEX. CD 3/8/57.

H. B. Zachry Co. Constr. Div., P.O. Box 10188, San Antonio, Tex., CA Est. **$700,000**, 44 mi. 8 in. crude line, Livington-Artesia areas, Eddy and Lea Counties; 3.7 mi. 4- to 6-in. crude line, and small electric pump station, Empire-Abdo field, Artesia area, NEW MEXICO. Service Pipeline Co., N. Esperson Bldg., Houston, Tex. CD 3/25/52.

BUILDINGS—LB & CA

▲ **Steenberg Constr. Co.**, 1371 Marshall Ave., St. Paul, Minn., CA **$2,000,000**, 10 story LODGE and OFFICE, Fourth St. and Cedar Ave., ST. PAUL, MINN. Degree of Honor Protective Assn., 389 St. Peter St., St. Paul, Minn. CD 2/4.

† **Miller-Stauch Constr. Co.**, 322 Railway Exchange Bldg., Kansas City, Mo., CA **$435,409**, LABORATORY FACILITIES, etc., at Bendix Aviation Corp., Inv. No. 292-60-4, KANSAS CITY, MO. U. S. Atomic Energy Comn., Albuquerque Operations Office, Albuquerque, N. M. Bids Aug. 6. CD 7/15.

Smith, Inc., 1620 1st Ave. N., Fargo, N. D., CA Est. **$300,000**, RAW POTATO STORAGE, GRAFTON, N. D. Bordon Food Co., 350 Madison Ave., New York 17, N. Y. Cowell & Robinson, 25 W. 43rd St., New York, N. Y., archts.-engrs.

▲ **Procon, Inc.**, 1111 Mt. Prospect, Des Plaines, Ill., CA **$1,000,000**, high octane gasoline producing REFINERY ADDN., akylation unit, CUSHING, OKLA. Midland Co-operatives, Inc., 739 NE Johnson St., Minneapolis, Minn. Universal Oil Products, 30 Algonquin Rd., Des Plaines, Ill., engr.

Downey Bros., Contractors, 6925 Gulf Freeway, Houston, Tex., Owner Builds, **$432,325**, 50 DWELLINGS; **$424,000**, 48 DWELLINGS, BEAUMONT, TEX. CD 6/19.

Downey Bros., Contractors, 6925 Gulf Freeway, Houston, Tex., Owner Builds, **$461,700**, 51 DWELLINGS; **$408,000**, 36 DWELLINGS, HOUSTON, TEX. CD 6/19.

Oak Glen Bldg. Co., 730 Little York Rd., San Antonio, Tex., Owner Builds, **$439,650**, 36 DWELLINGS; **$406,000**, 27 DWELLINGS, Shepherd Park Plaza, HOUSTON, TEX. CD 6/8.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Arizona**—PARKING AREAS—BA 9/23—Bureau P. Roads, Dpt. Commerce, 133 Hermann St., San Francisco, Calif., bit. surf., portions base course, parking areas, 11.064 mi., Proj. 3-B6, Grand Canyon National Park. CD 9/3/58.

† **IDAHO**—BA 9/25—Bureau P. Roads, Dpt. Commerce, Boise,

Valley Co.—grading 4.5 mi. Warren Wagon Rd., Proj. 21-B7.

† **ALASKA**—BA 9/29—Bureau P. Rds., Dpt. Commerce, Federal Bldg., Juneau,

clearing, grubbing, grading, draining 8.7 mi. Hope Hy., Seward-Anchorage Hy. to Turnagain Arm., Proj. FH-D3-E5.

construct cantilevered retaining wall, Spenard Rd., Proj. F-6000, Contr. 5.

† **Calif., San Pedro**—RADAR TOWER—BA 9/29—U. S. Eng., Los Angeles Dist., 751 S. Figueroa St., Los Angeles, radar tower and utilities at Norad Control Center, San Pedro Hill, ENG-04-353-60-11. Extended date. CD 9/9.

Wash., Everett—BA 9/29—City, City Hall, sewage pipe line over Snohomish River involving 1,100 ft. 6 in. steel water main, 2,850 ft. 24- to 39-in. rein.-con. pipe, etc. Gray & Osborne, 1844 Westlake Ave. N., Seattle, engrs. CD 2/24/58.

CALIFORNIA—BA 10/7—State Div. Hys., 1120 N. St., Sacramento,

Colusa Co.—repairing abutment Halle Creek Bridge, FAS Co. Rd. 1036 (McDermott Rd.) about 8 mi. N.W. of Maxwell and lining Funks Creek Channel along FAS Co. Rd. 1035 (Lenahan Rd.) between 0.1 mi. and 0.4 mi. west of Hy. 99W about 4 mi. north of Maxwell.

† **Wash., Spokane**—MICROWAVE FACILITIES—BA 10/8—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, eleven 30 x 30 x 13 ft. rein.-con. underground structures, with nine engine generator sets, for microwave facilities, Fairchild Air Force Base, ENG-45-108-60-29. CD 9/9/58.

† **Wash., Spokane**—UNDERGROUND WELL HOUSES, etc.—BA 10/13—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, concrete underground well houses, water supply lines, power supply and control circuits to well houses and gravel-surf. access roads at Complexes A and C, WS-107A-1 Operational Base, Fairchild Air Force Base, ENG-45-108-60-30. CD 9/9/58.

BUILDINGS—BA

† **Wash., Richland**—WASTE CRIB—BA 9/24—Atomic Energy Comn., P.O. Box 550, waste crib, 200 East area at Hanford Works. CD 1/10/58.

▲ **Calif., San Diego**—INDUSTRIAL ARTS—BA 10/14—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, 4 story, 3,700 sq. ft. bsmnt., 91,350 sq. ft. Industrial Arts Bldg. addn., San Diego State College, W.O. 4160GC-9. $2,000,000. CD 1/14/55.

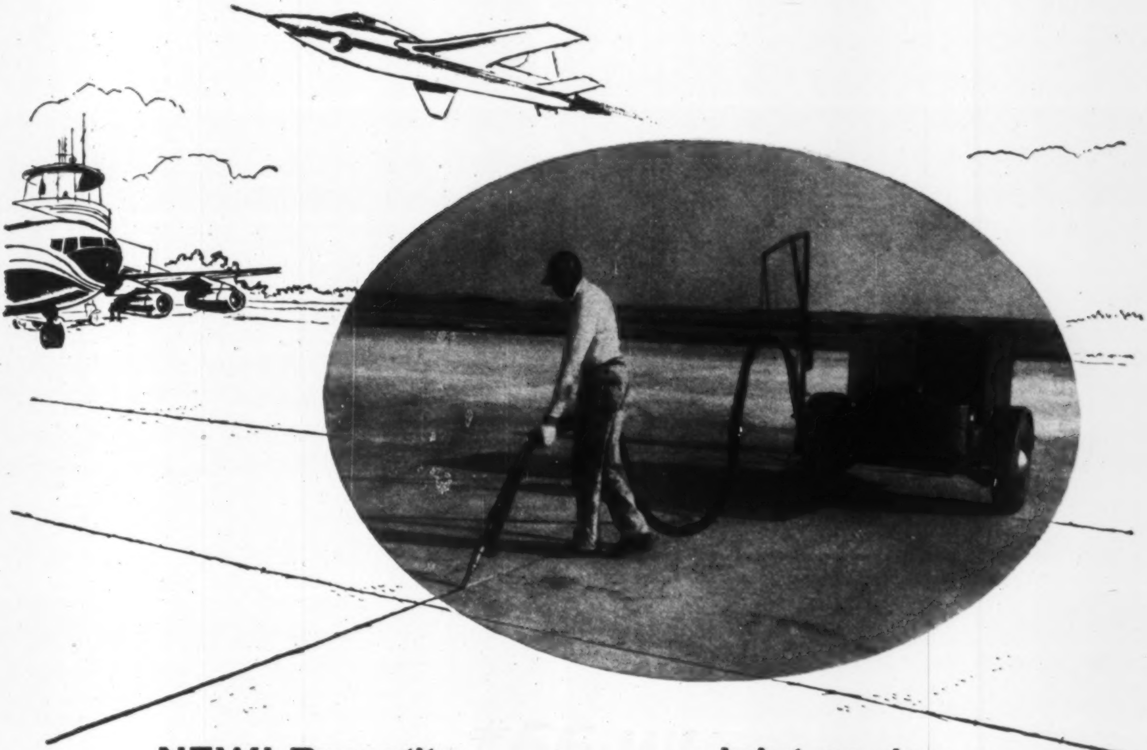
HEAVY CONSTRUCTION—LB & CA

Bonneville Constr. Co., Box 900, Idaho Falls, Idaho, CA **$199,340**, 69 KV transmission line, Utah 6ab, Section 4, Escalante to Henrieville, Seiver Co., UTAH. Garkane Power Assoc., Richfield, Utah. Bids Aug. 18. CD 8/12.

Utilities Service Co., Box 1775, Farmington, N. M., LB **$158,996**, Utah 6AB, Garfield Section Moccasin Proj. (Utah).

† **Gibbons & Reed Co.**, P.O. Box 2429, Salt Lake City, Utah, CA **$244,350**, overlay paving on Runway 13L-31 R, Naval Air Station, NBy 22804, FALLON, NEV.

(Continued on page 300)



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(Continued from page 298)

Dist. P. Wks. Office, 12th Naval Dist., Room C112, San Bruno, Calif. CD 9/17/57.

City, City Hall, Spokane, Wash., rejected bids Aug. 13, swimming pool in Shadle Park, SPOKANE, WASH., LB **$224,986.** New bids Sept. 17. CD 8/20, under LB.

Max Milosevich, 2405 Roanoke Rd., San Marino, Calif., CA **$137,809,** sanitary sewers, Holton St., La Puente, C.I. 1980-M, LOS ANGELES, CALIF. Los Angeles County, Hall of Records, Los Angeles, Calif. Bids Aug. 7, awarded Aug. 11.

A. Teichert & Son, Inc., 1931 Stockton Blvd., Sacramento, Calif., LB **$397,436** (6 bidders), drainage work, pipe, manholes, cobbles, etc., East Coloma Drainage Assessment Dist., SACRAMENTO, CALIF. Sacramento County, 827 7th St., Sacramento, Calif. Bids Sept. 2. CD 8/18.

San Ardo Constructors, Inc., P.O. Box 315, San Ardo, Calif., LB **$158,445** (10 bidders), access roads, parking lot, boat launching ramps, Nacimento Dam, SALINAS, CALIF. Monterey Co., Courthouse, Salinas, Calif. CD 9/4/59.

Sanchez Bros., Box 83, Santa Ynez, Calif., CA **$149,987,** road imprvs. and water sys. for Sarta Ynez Rancho Estates, SANTA YNEZ, CALIF. Santa Ynez Land & Water Co., 351 E. Green St., Pasadena, Calif. Case & Gregory, 800 W. Colorado Blvd., Los Angeles, Calif., engrs. Bids July 13.

BUILDINGS—LB & CA

† **H. K. Ferguson Co.,** 120 Montgomery St., San Francisco, Calif., CA **$178,000,** First Phase, ADVANCED REACTIVITY MEASUREMENT FACILITY, National Reactor Testing Station, ARCO, IDAHO. Atomic Energy Comn., Idaho Operations Office, Idaho Falls, Idaho. CD 7/29.

C. L. Peck, 816 W. 5th St., Los Angeles, Calif., LB **$599,806** (10 bidders), 7 story rein.-con. PARKING GARAGE, BEVERLY HILLS, CALIF. City, City Hall, Beverly Hills, Calif. Bids Sept. 2. CD 8/4.

A. S. Holmes & Sons, 9300 G St., Oakland, Calif., CA **$278,566,** 1 story, 47,000 sq. ft. WAREHOUSE; 2 story, 6,000 sq. ft. OFFICE, parking area, SAN FRANCISCO, CALIF. Army Realty, Chicago, Ill., c/o Rathjen Bros., lessee, 135 Berry St., San Francisco, Calif. Peter N. Daswick, 134 N. LaSalle St., Chicago, Ill., archt.

CANADA

HEAVY CONSTRUCTION—BA

N. S., Clarke's Harbour—HARBOUR IMPROVEMENTS—BA 9/23—Dpt. P. Wks., Hunter Bldgs., Ottawa, Ont., harbour imprvs., Shelburne Co. $155,000.

ONTARIO—BA 9/30—Dpt. Hys., Parliament Bldgs., Toronto,

Napanee—grading 1.6 mi. Hy. 401, Canadian National Rlw. subway at Napanee (Contract 59-258). $200,000. CD 12/8/50.

ONTARIO—BA 10/7—Dpt. Hys., Parliament Bldgs., Toronto,

Windsor—grading, granular base, hot mix paving 1.93 mi. Hy. 33 from Hy. 401 to Ouellette Ave. (Contract 59-226). $300,000. CD 12/8/50.

BUILDINGS—BA

B. C., Vancouver—PHARMACY WING—BA 9/22—British Columbia Govt., Parliament Bldgs., Victoria. 4 story, rein.-con., steel, brick pharmacy wing addn. $500,000. Plans deposit $50. Thompson, Berwick & Pratt, 1553 Robson, archts. CD 9/4.

Man., Winnipeg—UNEMPLOYMENT INSURANCE COMMISSION—BA 9/30—Dpt. P. Wks., Hunter Bldgs., Ottawa, Ont., caisson and foundation work for Unemployment Insurance Commission Bldg. Total est. over $400,000. Plans deposit $25. Smith-Carter-Searle & Assocs., 65 Dewdney Ave., archts.

N. S., Glace Bay—FEDERAL—BA 10/7—Dpt. P. Wks., Hunter Bldgs., Ottawa, Ont., federal bldg., $400,000. Plans deposit $150.

BUILDINGS—SLC

Que., Cowansville—PLANT—Visking Co., Div. Union Carbide Canada Ltd., 2221 Yonge St., Toronto, Ont., soon lets contract part 1 and 2 story, 140 x 200 ft., concrete, structural steel, concrete block, polyethylene film plant to mfg. VisQueen. $150,000. Grattan D. Thompson, 4135 Sherbrooke St. W., Montreal, archt. Edgar A. Cross & Assocs., 2510 Yonge St., Toronto, Ont., engr. CD 8/21.

HEAVY CONSTRUCTION—LB & CA

BRITISH COLUMBIA—British Columbia Govt., Parliament Bldgs., Victoria. Bids opened 8/26.

Burns & Dutton Concrete & Constr. Co. Ltd., 563 W. Broadway, Vancouver, B. C., LB **$276,281** (6 bidders) Proj. No. 305, Mosquito Creek Bridge, North Vancouver. CD 8/19.

Smith Bros. & Wilson, Ltd., 1267 Richards St., Vancouver, B. C., LB **$829,500,** rein.-con., frame CLUBHOUSE, VANCOUVER, B. C. Shaughnessy Golf Club, Marine Dr., Vancouver, B. C. Bids Sept. 1. CD 8/19.

MANITOBA—Dpt. P. Wks., Parliament Bldgs., Winnipeg,

Paul Braun Constr., 800 Henderson Hy., Winnipeg, Man., CA **$599,650,** grading Section 1G, Thompson-Wabowden-Wekusko Rd., Thompson. CD 8/19, under LB.

MANITOBA—Dpt. P. Wks., Legislative Bldgs., Winnipeg,

Nelson River Constr. Ltd., 101 Dawson St., Winnipeg, Man., CA **$926,070,** earth shoulders, stab. gravel base course, plant mix bit. surf., stab. gravel shoulders on Provincial Trunk Hy. No. 4, approx. 27 mi., Shoal Lake.

MANITOBA—Dpt. P. Wks., Parliament Bldgs., Winnipeg,

Pat-Mor Constr. Co. Ltd., Virden, Man., LB **$136,950,** (2 bidders), grading about 12 mi. Hy. 41A, vicinity of Birtle.

Leslie Constr. Co., The Pas, Man., CA **$163,983,** grading, roads, Pasquia Lane Settlement Proj. near The Pas, THE PAS, MAN. Manitoba Dpt. of Mines & Natural Resources, Legislative Bldgs., Winnipeg, Man.

Macaw & MacDonald Ltd., 407 Youville St., St. Boniface, Man., LB **$104,164** (8 bidders), harbor imprvs., THE PAS, MAN. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, Bids opened 9/9,

Ardelt Industries of Canada Ltd., 181 Henry Sturm Blvd., Kitchener, Ont., LB **$287,323** (9 bidders), structural steel for bridge, Hy. 11, Missinaibi River Bridge (Contract 59-113), Mattice. CD 8/12.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,

Caswell Constr. Co. Ltd., 56 Rand Ave. W., Kirkland Lake, Ont., LB **$350,859** (3 bidders), granular base, hot mix paving 1.08 mi. Hy. 66 from Main to Burnside Dr., Kirkland Lake (Contract 59-205). CD 12/8/50.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Toronto, Bids opened 9/2,

Ont.—**King Paving Co. Ltd.,** Box 410, Oakville, Ont., LB **$749,697,** grading, granular base, hot mix paving Hy. 11 from road allowance Cons. 8 and 9, Twp. of Oro to South Orillia by-pass interchange, Trans-Canada Hy. 12 (Contract 59-41), Orillia;

Ont.—**Seeley & Arnill Constr. Co. Ltd.,** Dundalk, Ont., LB **$356,135,** granular base, hot mix paving 5.98 mi. Hys. 10 and 24, Camillia North to Hy. 89 (Contract 59-180), Owen Sound;

Ont.—**Smiths Constr. Co. Ltd.,** Arnprior, Ont., LB **$310,098,** granular base, hot mix paving 8.01 mi. from ½ mi. north of Porquis Junction southerly (Contract 59-76), Porquis Junction;

Ont.—**K. H. Beamish Constr. Co. Ltd.,** Thornhill, Ont., LB **$270,989,** hot mix paving 4.2 mi. Hy. 401 from Whitby to Oshaqa (Contract 59-215), Whitby. CD 8/6.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, Bids 9/2,

Mowbray Constr., Wingham, Ont., LB **$175,637,** bridge Hy. 401, Blenheim Twp., Bridge No. 2 over Nith River (Contract 59-153), London. CD 8/6.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,

Standard Steel Constr. Co., Welland, Ont., LB **$147,322,** structural steel for bridge at Judge, Hy. 65, Blanche River Bridge (Contract 59-89).

Kedrosky Constr. Ltd., 35 Water St. S., Galt, Ont. CA **$480,684** (8 bidders) 600,000 gal. daily capacity activated sludge sewage treatment plant for London Twp., LONDON, ONT. Ontario Water Resources Comn., East Block, Parliament Bldgs., Toronto, Ont. Bids July 15, awarded Sept. 4. CD 6/29.

Dileo & Co., 239 Bellwoods Ave., Toronto, Ont., CA **$108,218,** storm sewers, Willowdale and Empress Aves., TORONTO, ONT. Twp. of North York, 5000 Yonge St., Willowdale, Toronto, Ont. Bids Aug. 28, awarded Sept. 1. CD 8/25.

Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont., temporarily postponed North Toronto Sewage Treatment Plant, sludge dewatering and storage facilities, TORONTO, ONT. Low bidder withdrew tender, LB **$371,000.** CD 9/1.

Swansea Constr. Co. Ltd., 363 Rogers Rd., Toronto, Ont., LB **$244,000,** prestressed concrete bridge deck, rein.-con. abutments, retaining walls and invert slab under bridge, Lawrence Ave. W. between Jane St. and Keele St., TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont.

Swansea Constr. Co. Ltd., 363 Rogers Rd., Toronto, Ont., LB **$239,465** (9 bidders), b. conc. on concrete pavement, concrete curbs, gutters, catch basins, sidewalks, etc., Keele St. at Wilson Ave., TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. CD 3/23/55.

Dick Constr. & Engineering Co., Ltd., 63 Empire St., Welland, Ont., CA **$112,612** (3 bidders), underground pumping station, sewage treatment lagoon, 1,355 lin. ft. sanitary sewer, 6,770 lin. ft. 8 in. force main, WHARTON, ONT. Ontario Water Resources Comn., East Block, Parliament Bldgs., Toronto, Ont. Bids July 2, awarded Sept. 4. CD 6/25.

PRINCE EDWARD ISLAND—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Bids opened 9/3,

Curran & Briggs Ltd., 61 Haverson Blvd., Toronto, Ont. LB **$337,280,** paving 8 mi. Gulf Shore Rd., Prince Edward National Park from Dalvay to Brackley Point Rd., Dalvay. CD 8/14.

Smith Constr. Ltd., and Wappel Concrete & Constr. Co. Ltd., 302 Canada Permanent Bldg., Regina, Sask., LB **$105,081,** 500 ft. Runway 12-30 extension at airport, REGINA, SASK. Dpt. Transport, Hunter Bldg., Ottawa, Ont.

BUILDINGS—LB & CA

▲ **Burns & Dutton Concrete and Constr. Co. Ltd.,** 5720 4th St. SE, Calgary, Alta., CA **$1,168,153,** general contract ARTS and EDUCATION BLDG., Calgary Branch University of Alberta; CA **$1,381,000,** general contract SCIENCE and ENGINEERING BLDG., Calgary branch of University of Alberta, CALGARY, ALTA. Dpt. P. Wks., Legislative Bldgs., Edmonton, Alta. Grand total $4,058,902. Bids Aug. 20, awarded Sept. 1.

Canadian Comstock Co. Ltd., Sun Bldg., Edmonton, Alta., CA **$997,529,** mech. contract science and engineering bldg., Calgary Branch, University of Alberta (Calgary, Alta.).

Lockerbie & Hole Western Ltd., 10718 101st St., Edmonton, Alta., CA **$512,220,** mech. contract ARTS and EDUCATION BLDG. Calgary Branch, University of Alberta (Calgary, Alta.).

P. B. Ford & Co., 709 Agnes St., New Westminster, B. C., LB **$402,000,** steel, concrete HOSPITAL, BURNS LAKE, B. C. Burns Lake Hospital Bd., Burns Lake, B. C. Birdley & Wagg, Victoria, B. C., archts.

▲ **Malcolm Constr. Co. Ltd.,** 554 Pembina Hy., Winnipeg, Man., CA Est. **$1,000,000,** PAPER MILL PLANT, BUILDING PRODUCTS PLANT EXPANSION, WINNIPEG, MAN. Building Products Ltd., Point Douglas, Winnipeg, Man. Bids Aug. 25, awarded Sept. 1. CD 8/13.

Barnett McQueen Co. Ltd., 460 Christina St. E., Fort Williams, Ont., CA Est. **$750,000,** 3 story, 90x160 ft. rein.-con., brick DRY BLDG. and OFFICE, at mine, ATIKOKAN, ONT. Caland Ore Co., Ltd., Box 1300, Atitokan, Ont. Foundation of Canada Engineering Corp. Ltd., 8 Spadina Rd., Toronto, Ont., engrs. Awarded Sept. 3.

H. J. McFarland Constr. Co. Ltd., Talbot St., Picton, Ont., CA **$542,000,** 3 story 66x170 ft., concrete, structural steel frame COUNTY COURT HOUSE, BELLEVILLE, ONT. County of Hastings, County Clerk, Belleville, Ill. Awarded Sept. 4. CD 8/18, under LB.

▲ **Andeen Constr. Ltd.,** 269 Queen St. E., Brampton, Ont., CA **$1,188,986,** COMPOSITE HIGH SCHOOL, BRAMPTON, ONT. The Central Peel Dist. High School Bd., Brampton, Ont. Bids July 28, awarded Sept. 2. CD 8/13, under LB.

▲ **Camston Ltd.,** 505 Eglinton Ave. W., Toronto, Ont., CA Est. **$1,264,000,** 7 story, rein.-con. OFFICE, southwest corner Bay St. and Yorkville Ave., TORONTO, ONT. Coupland Acceptance Ltd., 663 Yonge St., Toronto, Ont. CD 6/30.

Robert McAlpine Ltd., 2249 Yonge St., Toronto, Ont., CA Est. **$180,000,** 1 story, 31,000 sq. ft. structural steel FACTORY and OFFICE, Evans Ave., TORONTO, ONT. General Impact Extrusions Ltd., 43 Drummond St., Trans-Metro Properties, 25 King St., Toronto, Ont. Irving D. Boigon, 1896 Avenue Rd., Toronto, Ont., archt. Awarded Sept. 1.

▲ **Radfern Constr. Co. Ltd.,** 36 Toronto St., Toronto, Ont. CA Est. **$4,500,000,** 300,000 sq. ft., steel, rein.-con. brick, stone ARTS BUILDING, incl. 6 story office and residence, 2 story lecture rooms, TORONTO, ONT. University of Toronto, Simcoe Hall, Toronto, Ont. Bids Aug. 19, awarded Sept. 8. CD 7/9.

Louis Donolo, Inc., 8320 St. Lawrence Blvd., Montreal, Que., CA Est. **$400,000** (10 bidders), OFFICE, St. Mary's Medical Bldg., Cote des Neiges Rd., near Lacombe Ave., MONTREAL, QUE. Cote des Neiges Medical Center, Inc., c/o Louis & Aspler, archts., 5165 Sherbrooke St. W., Montreal, Que. Irving S. Backler, 5253 Decarie Blvd., Montreal, Que., engr. Awarded Aug. 26.

Parkview Constr. Co. Ltd., 4755 Van Horne Ave., Montreal, Que., Owner Builds, **$420,000,** two 54 suite concrete, brick APARTMENT BLOCKS, incl. 4 story, bsmnt., each 59x91 ft., Bourret Ave., MONTREAL, QUE. H. M. Tolchinsky, 5810 Cote St. Luc Rd., Montreal, Que., archt.

Yvan Leboeuf, P.I., 700 Ste. Croix Blvd., St. Laurent, Que., CA Est. **$600,000,** COLLEGE, corner Rues St. Charles and St. Jean Baptiste, PLESSISVILLE, QUE. Les Rev. Pere de Ste. Croix, 1090 St. Jean Baptiste, Plessiville, Que. Larose, Larose, Laliberte & Petrucci, 8 Roselawn Crescent, Mount Royal, Que., archts. Lalonde & Valois, 615 Belmont St., Montreal, Que., engrs. Awarded Sept. 3.

▲ **Poole Constr. Co. Ltd.,** 35th and Quebec St., Saskatoon, Sask., CA **$1,132,820,** 2 story, rein.-con. MOUNT ROYAL COLLEGIATE, SASKATOON, SASK. Saskatoon High School Bd., Saskatoon, Sask. Webster, Forrester & Scott, Saskatoon, Sask., archts.

PUERTO RICO

BUILDINGS—BA

† **Puerto Rico, Rio Pedras**—BIO-MEDICAL—BA 10/1—Atomic Energy Comn., Oak Ridge, Tenn., U.S.A., Bio-Medical Bldg. at Puerto Rico Nuclear Center, IFB 401-60-13B. Plans deposit $25.

HEAVY CONSTRUCTION—LB & CA

PUERTO RICO—P. Wks. Dpt., Stop 22, San Juan, Bids opened 8/28,

Miguel S. Sastre, P.O. Box 984, Bayamon, Puerto Rico, LB **$119,760,** 1.21 kms hy. called "Projecto Tibes" State Hy. 503, Ponce, Cecilio Delgado, c/o owner, chf. engr. CD 10/17/55.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—BA

† **Canal Zone**—AIRFIELD PAVEMENTS—BA 9/21—Base Procurement Office, Albrook Air Force Base, repairs to Airfield pavements, Albrook Air Force Base, IFB 66-501-60-10.

AMERICANS ABROAD

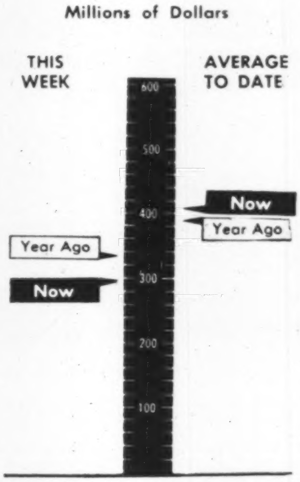
HEAVY CONSTRUCTION—LB & CA

▲† **A. C. Chock Constr. Ltd.,** 822 Mapunapuna St., Honolulu, Hawaii, and **Alcan Pacific Constr. Co.,** 1921 Stockton Blvd., Sacramento, Calif., LB **$1,557,000,** est. $1,000,000 (10 bidders), four rein.-con. buildings, approach lighting sys. for runway, fuel sys., incl. C unloading line and site grading, IWO JIMA. Dpt. Navy, Pearl Harbor, Honolulu, Hawaii.

(Proposal Advertisement see pp 312 to 314)

Construction Scoreboard

CONTRACTS ...



AMOUNT OF CONTRACTS LET

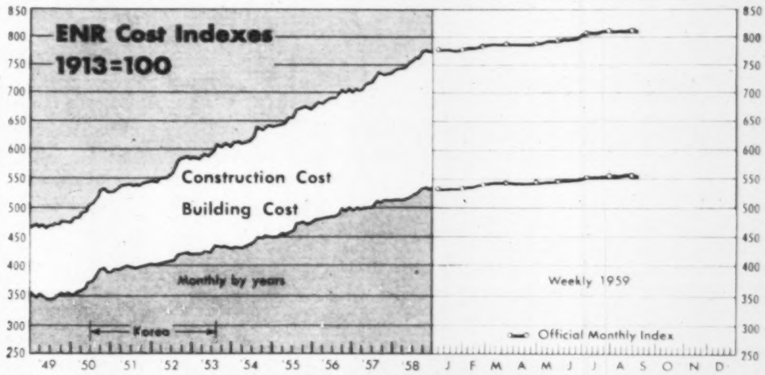
	This Week	Cum. 38 wks 1959	Chge '58-'59
	millions		%
All Heavy Constr.	$298.5	$15,452.5	+ 5
By Ownership			
PRIVATE	172.6	7,707.4	+28
PUBLIC	125.9	7,745.1	−11
State & Municipal	102.1	5,614.6	−12
Federal	23.8	2,130.5	− 9
By Type of Work			
PUBLIC			
Waterworks	6.4	307.8	+32
Sewerage	10.6	487.9	+ 7
Bridges*	7.8	568.7	+ 9
Highways	36.3	2,279.9	−13
Earthwork, Dams & Waterways	9.8	674.0	−16
Buildings:			
Excl. Housing	39.0	1,930.4	− 3
Housing	3.4	479.4	−49
Unclassified	13.0	1,024.8	−10
PRIVATE			
Buildings:			
Mass Housing	75.6	3,465.7	+20
Commercial	42.4	1,681.1	+18
Industrial	42.2	2,167.1	+61
Unclassified	12.0	385.7	+17

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of Sept. 10	Cum. 37 wks 1959	Chge '58-'59
	millions		%
Corporate Securities	$ 16.0	$2,632.0	−33
State and Municipal:			
All Except Housing	97.6	4,438.3	− 3
Housing	....	75.2	+122
Federal Loans	....	99.1	−29
Federal Aid	....	3,107.2	+1337
Total Nonfederal	$113.7	$10,351.7	+17
Federal Appropriations:			
Projects in U. S.	....	$1,226.3	−71
Outside U. S.	....	4.4	−81
Total New Capital	$113.7	$11,582.4	−12



CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Sept. 10 1959	% Change from Aug. 13 1959	% Change from Sept. 11 1958
Construction Cost	812.02	+0.01	+4.82
Building Cost	555.68	+0.05	+3.66

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

CONTRACTS AWARDED

	1959 Aug. (millions)	1959 8-Mos. (millions)	% Change from 1958 Aug.	% Change from 1958 8-Mos.
Total U. S., ENR reported	$1,495.0	$14,325.1	− 8	+ 1
Private	777.6	6,973.4	+ 8	+22
Public	717.4	7,351.8	−20	− 8
State and Municipal	540.6	5,273.4	−26	− 8
Federal	176.8	2,078.4	+ 6	− 8
ENR Volume Index, 1913=100	509	573	−11	+ 1

NEW CONSTRUCTION CAPITAL

Total U. S.	$3,631.3	$10,357.2	−10	17
State and Municipal Bond Sales	487.2	4,371.1	+45	− 1
Corporate Security Sales	182.4	2,605.1	−47	−32
Federal Loans, Aid (nonfederal work)	2,845.1	2,953.0	+1,114	+934
Federal Appropriations (federal work)*	116.6	427.9	−96	−89

*Includes funds for outside U. S.

MATERIALS SHIPMENTS

	Unit	1959 May (My) June (J) July (Jl)	1959 Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Percent Change from Year Ago Cum.
Portland Cement, Bur Mines	thous bbls	37,046(Jl)	188,467(7)	+15	+18
Concrete Paving Awards, PCA	thous sq yd	11,734(Jl)	63,442(7)	−31	−13
Fabricated Structural Steel	thous tons	239(Jl)	1,890(7)	−18	−14
Bookings, AISC	thous tons	259(Jl)	1,871(7)	−22	+17
Reinforcing Bars, Net, AISI	thous tons	142(Jl)	1,570(7)	−19	+33
Lumber, NLMA	mil fbm	3,146(Jl)	21,262(7)	+ 9	+11
Orders	mil fbm	3,180(Jl)	21,233(7)	+ 3	+12
Production	mil fbm	3,136(Jl)	20,848(7)	+12	+13
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face	mil bri	708.9(My)	2,746.5(5)	+18	+21
Vitrified Clay Sewer Pipe	thous tons	182.0(My)	722.3(5)	+16	+22
Structural Tile, Unglazed	thous tons	48.0(My)	210.7(5)	− 4	+ 3
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	5,562.9(J)	27,310.6(6)	−10	+ 2
Asphalt Siding	thous sales sqs	68.9(J)	116.1(6)	−25	− 5
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	136.3(J)	656.2(6)	+62	+47
Wire and Cable	mil lbs	30.2(J)	154.5(6)	+28	+18
Extruded Shapes (soft alloys)	mil lbs	90.9(J)	434.8(6)	+45	+41

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS	thous	3,032(Jl)	2,645(7)**	+ 5	+ 1
Contractor Failures, Dun & Bradstreet					
Number		137(Jl)	1,179(7)	−21	−10
Liabilities	thous	$11,328(Jl)	$67,506(7)	−19	− 7

**Average per month

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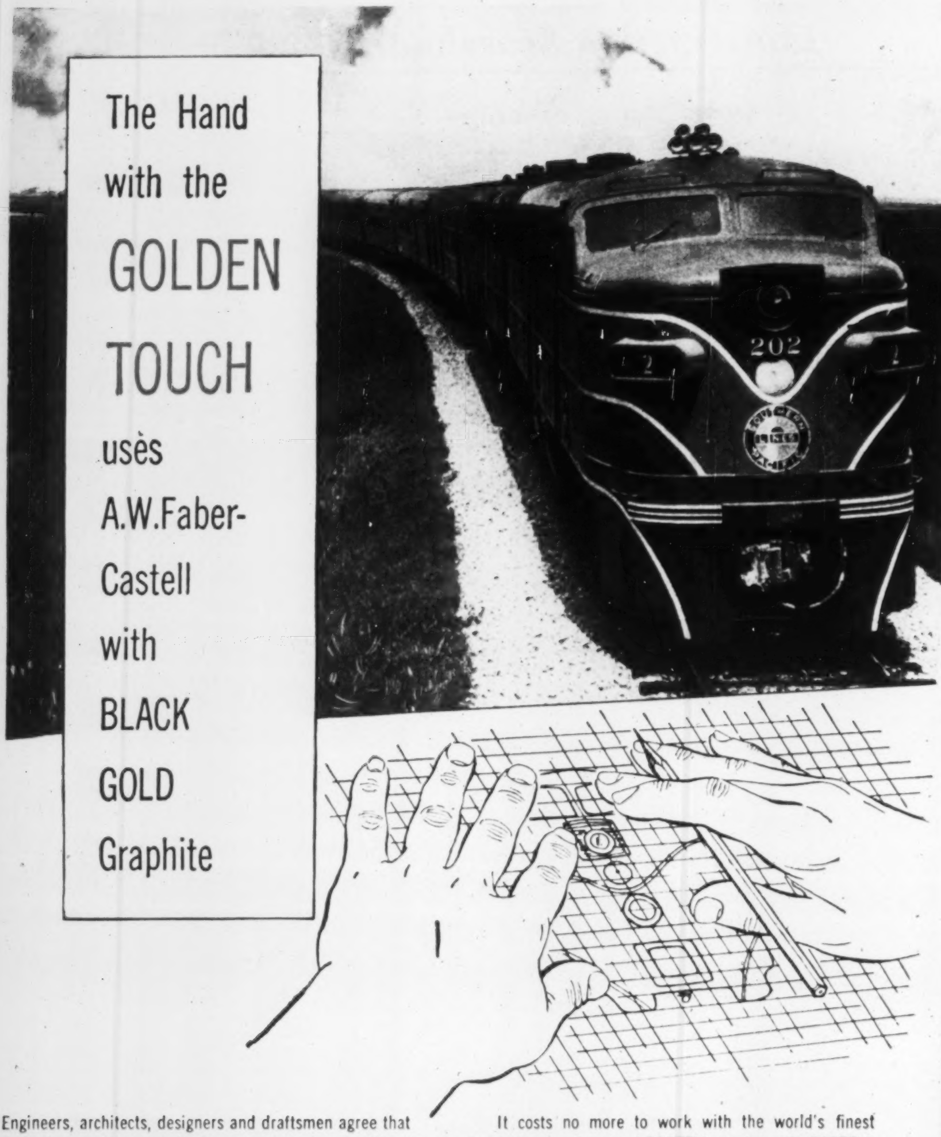

"Sunset"
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Six Construction Firms Sold

- **Three of them go to materials producer for $9 million as owner goes into semi-retirement.**
- **Competition forces one sale, two other sales come after owners' deaths.**

Six construction firms have changed hands recently. But tough competition figured in the sale of only one of them.

Two firms were sold after the death of their owners and the three others—owned by one man—were sold when the owner went into partial retirement.

Companies involved are:

- Ralph E. Mills Co., Frankfort, Ky., Talbot Construction Corp. and Talco Contractors, both of Winchester, Ky. All were bought by Vulcan Materials Co., Birmingham, Ala.
- J. R. Reeves Construction Co. of Sacramento, Calif., bought by Erickson Construction Co., also of Sacramento.
- H. Earl Parker, Inc., Marysville, Calif., sold to Sutton-White Truck Co. and William A. Sutton Co., both of Sacramento.
- C. G. Shockley Construction Co., Columbia, S. C., was liquidated. Its assets will be sold, although newly incorporated Midland Construction Co. has the right to buy any equipment it wants with a long-term loan. Midland was established by former employees of Shockley firm.

Largest transaction was the Vulcan Materials acquisition, which involved an exchange of stock and cash totaling about $9 million. The seller, Ralph E. Mills, says he plans to remain active in construction. He entered into the transaction because of his age, 63, and because he has no sons to take over the business.

The Talbot company is primarily in dam construction; the Mills company in smaller tunnel projects; and Talco in roadbuilding.

A spokesman for Vulcan says the companies will retain their identity, but with the financial resources of Vulcan behind them, they will be in a position to bid for larger jobs.

Tentative plans also call for the companies to participate in joint ventures with heavy construction companies in other states. Mergers with other contracting companies may be considered.

Vulcan Materials formerly was Birmingham Slag Co., producer of highway and railway roadbed aggregates. In 1956 it purchased Vulcan Detinning Co. of New Jersey, a reclaimer of tin and steel scrap from waste products.

In the last five years, through acquisitions of quarrying and construction materials suppliers in the Midwest and South, Vulcan's sales have gone from $22 million to $100 million annually. But the largest part of its business—about $40 million—still comes from aggregates.

Main reason for the purchase of the construction company by Vulcan is to have a constant and large outlet for its products, a top officer says. It hopes to be able to crack the dams and tunnels market, which up to now has proven relatively difficult to enter. However, it has long had a generous portion of the roadbuilding materials market in the South and is expanding into the northern and midwestern states.

The Parker company, in Marysville, near Sacramento, was sold for $2.5 million. It will disappear from the construction scene. Real estate and 400 pieces of equipment, including tractors, power shovels, trucks, compressors and other types of machinery were included in the transaction. The machinery will be sold by one of the joint buyers, Sutton-White Truck Co., Sacramento equipment dealers. Real estate will be leased.

The contracting company's financial situation would not allow it to be as aggressive as necessary for a large and successful business, Mr. Parker says.

"And bidding was getting a little tougher than I liked, so when the opportunity to sell came along, I took it," he adds.

But Mr. Parker is still bidding on jobs, and if he wins a contract, "I'll get some more equipment and go to work," he says.

Currently, the company he sold has a $1.5-million backlog to clean up, but this is expected to be finished next month.

The 20-year-old Parker company has developed into one of the largest earthmoving and construction firms in northern California. In 1956 it obtained $9 million in business.

The Reeves company of Sacramento was sold for $650,000. Assets transferred include two batch plants, a rock plant, ready-mix plant, and approximately 100 pieces of equipment. Contract volume through 1956-58 was $5 million annually.

Erickson Company, the buyer, was established in 1912. It's primarily a building firm, but with the acquisition of Reeves it will go into roadbuilding and other types of public works. It has an annual volume of $20 million to $24 million.

Liquidation of the Shockley company in Columbia resulted from the death last May of the owner, C. G. Shockley. Founded 30 years ago, it averaged $3 million to $4 million in new contracts yearly and employed 200 to 300 persons.

Business in Brief . . .

- **Capital improvement**—Nashville's City Planning Commission unveiled a $65-million public works program for the next six years. Included in the plans are 20 school additions, a new library and nine fire stations.
- **Caribbean computers** — Puerto Rico's Bureau of Highways retained Lockwood, Kessler & Bartlett, Inc., New York engineers, to establish a computer center, set up programs, and train technicians. It will be one of the few fully integrated computer centers in a highway department outside the U. S.
- **Fewer licenses**—Utah's Department of Contractors has asked cities and counties to stop licensing contractors. Under recent laws, the state holds jurisdiction over determination of a contractor's financial and professional competence.
- **Floods delay Levittown**—Builder William Levitt, Burlington, N. J., delayed plans for an 11,000-home Levittown outside San Juan, P. R. Drainage must be found for the site, which is subject to flooding. Labor trouble with carpenters on an earlier project may also be slowing plans.

Construction Still Unhurt by Strike

Pre-strike buildup of inventories keeps contractors going; supplies sufficient for one to six months

Construction is not yet severely hurt by the steel strike. Only a few jobs in a few cities are halted, according to an ENR spot-check of major steel-consuming centers.

Reinforcing bars seem the strongest part of the steel-supply picture, with almost all cities reporting adequate to plentiful supplies.

But spot shortages of structural shapes, plates and sheet steel are starting to crop up.

St. Louis, San Francisco, Birmingham and Minneapolis report no shortage of rebars. In the St. Louis area, reinforcing bars are still being produced by Laclede Steel Co., which was not struck. Granite City Steel Co., another firm still in operation, is producing sheet steel. Moreover, local fabricators prepared for the strike, by moving in large inventories. So except for some special sizes of steel products, supplies continue to stand up fairly well.

The St. Louis area therefore can withstand another month of strike without serious effects, construction men believe.

San Francisco reports that rebars, nails and some popular-sized structural shapes are available from local stocks. But certain structural shapes are no longer available and some larger construction jobs in the area have been shut down by steel shortages.

In Birmingham, a good supply of rebars is being produced by local plants that are still operating. But structural shapes are in short supply, and only imported plate is available. The foreign delivery is slow, requiring up to five months. Foreign steel prices are close to those for domestic steel on a local delivery basis.

In Minneapolis, the supply of rebars and structural steel shapes is good. Galvanized sheets are in short supply. Cold-rolled steel is also becoming scarcer.

Cleveland is the only city reporting shortages of rebars. This is expected to shut down several construction jobs soon. Supplies of structural shapes are also out of balance, with shortages in some sizes and good supply in others.

Several cities—Dallas, Seattle, Chicago, Atlanta and New Orleans—can withstand strike conditions for another one to six months.

In Dallas, the supply of standard steel shapes is reported plentiful, with a three- to four-month supply on hand. Users are reported turning to imports.

Seattle has stocks adequate for at least another six months.

In Chicago, one warehouseman estimates it will be another month before steel supplies become critical. There are some signs of tight supply, but no construction shutdowns are reported. Imported steel is helping cushion effects of the strike.

In Atlanta, steel warehousemen and fabricators report enough steel on hand to last for "at least 30 more days." But one storm warning was posted by the Georgia Bridge & Iron Co. It halted construction on a new high school and a gymnasium.

Both Atlanta and St. Louis report that the steel strike has had no apparent effect on employment. Unemployment levels in both cities are no lower than normal for this time of year, officials say.

In New Orleans, Jones & Laughlin Steel Co. reports ample stocks, even though its plant is not operating. Other firms report that steel consumers have enough supplies to last another 45 to 60 days. Much structural steel pipe and casing is being imported to New Orleans with no price changes noted.

Denver also reports no change in steel prices, and none is expected until after the strike ends. There are some holes in steel inventories, with certain items in short supply.

In Los Angeles, most steel supplies are good, but plate and sheet steel are in short supply.

The State Highway Department in Virginia says work on two highway bridges, costing $421,000, is stopped. Other projects are expected to be shut down soon, if the strike continues.

Canada apparently has barely felt the effects of the U. S. steel strike. Canadian mills are unaffected. Steel supplies are still good in Toronto. And Montreal reports that European imports plus Canadian production are taking up most of the slack.

Equipment Orders Climb Again

Contractors continued to order new construction equipment at a record pace in July.

The New Orders Index for construction and mining machinery in that month edged up to 330, based on 1949 = 100.

The index is computed on the basis of reports from manufacturers cooperating in surveys conducted by the McGraw-Hill Department of Economics.

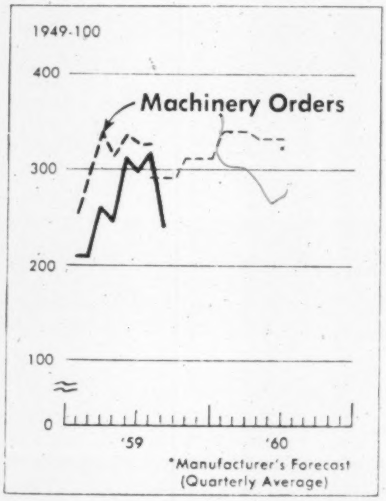
Orders in July topped the same month of last year by 26%. This brings the 1959 monthly average 31% above the first seven months of last year.

The fast pace at which contractors are investing in new equipment reflects the spurt in new business during May, June and July. ENR's Heavy Construction Contract Index hit 316 in July. That was the peak of 1959 and matches 1958's monthly high, which was also scored in July.

But also to be considered is the August slide in contract awards, which may have taken the edge off demand for new equipment.

A slump in highway contracts and a sharp drop in private mass housing, combined with declines in several key types of public works in August to pull the Contract Award Index down to 238.

The drop was more than a seasonal one and brings the index 8% below one year ago.



(B&F continued p. 306)

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Here's the Capital Spending Outlook

	(In millions of dollars)	Anticipated 1959			% Change
	Actual 1958	March Survey	June Survey	Sept. Survey	1958-59 Latest Survey
Manufacturing	$11,433	$12,274	$12,395	$12,444	+ 9
Durable Goods	5,469	5,827	6,012	6,020	+10
Non-durable goods	5,964	6,447	6,383	6,424	+ 8
Mining	941	932	982	996	+ 6
Railroad	754	753	867	1,032	+37
Transportation, Other Than Rail	1,500	1,900	1,986	2,024	+35
Public Utilities	6,088	6,143	5,891	5,840	− 4
Commercial & Other	9,810	9,790	10,444	10,919	+11
Total	30,526	31,792	32,565	33,255	+ 9

Source: S.E.C. & U. S. Dept., Commerce

More Construction Business Due

A period of widespread, heavy plant construction is opening up for contractors. American industry is expanding plant and facilities, and the momentum gained in recent months could carry early next year to levels matching that set during the boom year of 1957.

Business spending plans for 1959 are now projected at $33.3 billion by the U.S. Department of Commerce and the Securities and Exchange Commission.

That would be 9% above 1958's actual outlays of $30.5 billion. Government economists expect the spending surge to run at least into the middle of next year.

The latest estimate is also $690 million above the estimate reported three months ago by the same agencies. This indicates businessmen are not planning to reduce plant and capital investments because of the steel strike.

Federal officials believe, however, that should the strike continue much into the fourth quarter, it is possible that outlays in that period could be adversely affected. And an early settlement could have a converse effect, they add.

The SEC-Commerce figures provide no breakdown to show precisely how much goes for equipment expenditures and how much for construction and modernization of buildings and other plant facilities. In manufacturing last year, which was a period of retrenchment in capital spending, roughly two-thirds went for equipment and modernization and only about one-third for building of plants.

But in a period of expansion, such as the present, the proportion going into construction generally is higher, according to one government expert.

"We are definitely in an expansion period now. We can't say how much is going for plant, but we know there's a lot of construction going on."

Practically all major industries are planning to spend more in the last half than they did in the first six months. The single exception is electric power companies, which have trimmed sails somewhat following a period of heavy expansion. Public utilities as a group, however, are increasing outlays significantly.

Manufacturing firms estimate total 1959 capital spending at $12.4 billion, a jump of $1 billion over last year. Notably hefty increases are ticketed by machinery companies, stone, clay and glass industries, and iron and steel producers.

Railroads, after a depressed building year in 1958, are planning to lay out more than $1 billion in capital expenditures this year. This is 50% higher than the industry had banked on just six months ago.

The other big area of capital expansion is the "commercial and other" sector. It includes retail stores, services, finance, communications and construction. Over-all spending here is placed at $10.9 billion for the year, and 11% increase over 1958.

Public Works Proposals Increase During August

The biggest influx of new proposed public projects of the last four months reversed the recent downtrend in the ENR Backlog of Proposed Heavy Construction.

In August, construction in the planning stage had a total estimated cost of $114.1 billion. That is fractionally above the July 1959 low and more than 2% above August 1958.

California now has the biggest backlog of all the states—$14.2 billion.

Double-Edged Bonus

Bonus-penalty plan gets mixed reactions

Architects in Jefferson County, Colo., have mixed feelings about the school board's plan to give them 5% of all construction expense shaved from the budgeted cost of a project—but perhaps compel them to redesign the building if actual costs are more than 5% above the budgeted cost.

Redesign is an unlikely possibility, according to George McCormick, engineer for the school board. The board does not automatically reject bids that exceed the budget by 5%. "We first try to negotiate downward and bring it within reach," he says. "Next, we reject all bids and invite new ones. We doubt that we would ever have to order a complete redesign."

The 5% architect's bonus applies to savings where actual construction costs are less than the budgeted cost. The budgeted cost is fixed in advance by Mr. McCormick's office, and spelled out in the architect's contract. The contract establishes the scope of the work and the complete requirements the architect must meet. If the board later alters the plans, additional costs are kept separate from original contract, so as not to affect the architect's bonus.

Mr. McCormick reports a "favorable" response from architects. "In fact, five architects who held contracts with us before this new (plan) was adopted, asked to have the amendment made in their contracts," he says.

But not all architects are enthusiastic. Lloyd Williams, president of the American Association of Architects, says, "Architects are professional enough that they should be able to fit a job to the budget without the promise of a bonus or the threat of a penalty. . . ."

Another architect, currently doing work for the school board, states, "We always try to hit the budget. We don't feel it's necessary to provide a bonus."

"A bonus may not be wise because it may tempt the architect to cheapen the design unnecessarily," warns a Denver architect. Another hazard is outlined by a Jefferson County architect who has not worked for the school board: "Such a policy might easily result in high estimates. . . . (The architect) might feel he should anticipate higher costs than justified if the penalty or bonus is dangling in front of him."

Jefferson County Board of Education has completed $5.5 million worth of schools in its current $9.5-million building program.

(*B&F continued p. 308*)

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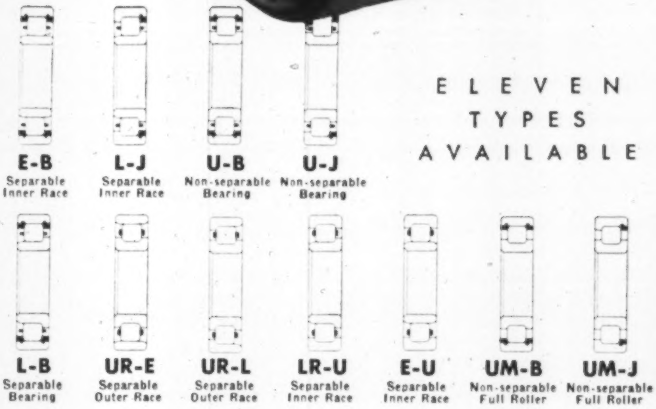
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Roadbuilder Payments Threatened

Kentucky highway-construction funds have become a pawn in a political chess game that threatens to bring the state's entire highway program to a halt and leave contractors unpaid for $13.5 million worth of work.

The state treasurer, on advice from the attorney-general, refuses to transfer $6 million in highway-bond money to the highway department. The attorney-general charges that department officials illegally spent prior funds for other-than-authorized purposes. Indications are the dispute is more political than legal.

The money pinch leaves state highway officials with only an estimated $6.3 million, from such sources as gasoline taxes, to meet expected bills totaling $19.9 million—including the $13.5 million owed to highway contractors for work completed.

Aggravating the financial picture is the shortage of highway funds at the federal level. Reportedly, $1.3 million in federal-aid funds were withheld by the Bureau of Public Roads because of its own mony shortage. Kentucky highway officials also don't know how long they must wait for another $6 million due them from BPR. Congressional passage of the highway bill should clarify this situation.

Both Attorney-General Jo M. Ferguson and State Treasurer Henry H. Carter are members of the Bert Combs-Earl Clements faction of the state Democratic party. Highway Commissioner Ward Oates is lined up with Gov. A. B. Chandler.

The Combs faction charges that Governor Chandler and Mr. Oates intend to spend all the highway deparment money before Chandler leaves office in December. Governor Chandler says: "I think the treasurer (Carter) wants to deliver every check in person so he can get votes in the election." The governor threatens to send contractors seeking payment to the treasurer when the highway department runs out of money.

In 1956, voters approved a $100-million bond issue, to be used solely for matching federal-aid roadbuilding funds. Thus far, $70 million worth of the bonds have been sold, and $33.2 million was turned over to the highway department.

But, says the attorney-general, only $29.2 million of the transferred money was used to match federal funds. The remainder, he contends, was illegally used for other highway department expenses.

Mr. Ferguson filed a declaratory-judgment suit asking a state court to decide on the proper method of handling money from the roadbond fund. Mr. Carter, meanwhile, has halted further cash transfers from the fund until the suit is decided, or until highway officials convince him the bond money would be kept separate and used only to match federal aid.

The Kentucky Association of Highway Contractors has adopted a "wait-until-we-are-hurt" attitude. But members agree they cannot stay in business long if their payments are frozen. A spokesman for the association reports that only one contractor has stopped working so far. But others will be forced to shut down the moment their progress payments stop, although contractors with good banking connections will be able to work perhaps a month longer, he says.

Is Kentucky Loan Plan Legal?

Kentucky is testing the legality of its Industrial Development Finance Authority. In doubt is the statutory power of IDFA to lend state money to small cities trying to attract industry.

The 1958 legislature created IDFA, but made no appropriations for it. The agency was authorized to loan small towns up to 30% of their total needs to provide physical facilities for specific industries. It also authorizes loans of up to 50% of a community's total needs in developing general industrial sites.

Earlier, the Industrial Authority announced that to test its powers, it would find a small test community that could show such need (ENR April 23, p. 104). Gov. A. B. Chandler allocated $5,000 for a test fund. Now the state finance commissioner refuses to transfer the money, but is testing the act in another way. He claims the state constitution prohibits transfer of funds because the act establishing IDFA provides for:

- Public payments to persons for other than public service.
- Use of tax money for other than public purposes.
- Lending state credit to individuals, companies, associations or cities.
- Using funds from state tax levies for counties, cities or towns.

The finance commissioner is asking the court to decide whether it is his duty to transfer funds to IDFA. If the court rules against the finance commissioner, the agency will have won.

Architect Business

Biggest firms lead the way to record $11-billion year.

Architect firms handled a record $11 billion in new design work in 1958, according to ENR's annual analysis of firms doing over $100,000 in new business.

The record was set despite a 5% decline in the number of firms and 14% drop in the number of projects they handled.

The 3,279 architect firms in the ENR listing for 1958 is 8% below the record number of 3,573 firms listed in 1956. The 6,795 new design projects undertaken last year is 24% less than the peak load of 8,896 new jobs in 1956.

The 1958 record is 6% higher than the previous record of $10.4 billion, set in 1956, and represents a 27% rebound in dollar volume over 1957, when a big dip occurred.

Most of the credit for the new record goes to the bigger firms—those undertaking over $1 million in new design work last year. Those firms increased their new business last year to a record $10.3 billion—31% above 1957—even though they shrank more than the under-$1-million firms in number of firms and number of new projects.

The $10.3 billion in new business garnered by over-$1-million firms is 93.3% of all new business signed by firms in the over-$100,000 class. That's a record share for the bigger firms.

Building design accounts for the largest portion of new design work. Last year, architects gave increasing attention to schools, housing and private office buildings. They also handled a sizable volume of public office buildings and shopping centers.

Industrial design work, in contrast, was cut almost in half. In addition, design work outside the building field sagged 30% in 1958. Every other-than-building category shared in the decline except bridges and earthwork-dams-waterway projects. But the dollar volume in these latter two categories was comparatively small.

British Engineering Firm Founds Aviation Service

A British engineering-construction firm that has used airplanes in the course of its own business for 14 years will attempt to make that experience pay off in a new field.

Sir Robert McAlpine & Sons of London has established an airplane advisory, leasing and sales service affiliate to serve industry.

Court Upsets Mountain-Pacific

Rules that failure to include NLRB hiring standards in contract hiring clause does not make the clause illegal

The construction industry will have to wait until the wheels of justice spin some more before they know where they stand on hiring hall provisions—both old and new—now in use in labor contracts.

The Ninth Circuit Court of Appeals—the first appellate court to review the Mountain-Pacific case—has sent the case back to the National Labor Relations Board "for further consideration."

In doing so, the court:

- Reversed the board's ruling that absence of the Mountain-Pacific standards makes a hiring hall provision invalid on its face.
- Affirmed the board's ruling that a contractor association that is a party to a labor contract is an employer in the eyes of the law and may be held responsible, if the evidence warrants it, for discriminatory hiring practices that occur.

The court took the position that labor contract language on union referral or hiring hall practices is merely part of the evidence that may be considered, along with actual practice, to establish union and employer responsibility for hiring discrimination.

If this position is sustained, it means that mere failure of a labor contract to conform to the Mountain-Pacific mandate is not enough to make a union or an employor liable for a violation of the law.

It also means that surface conformity with the Mountain-Pacific formula is no protection against a later finding that a violation in fact occurred.

The court did not discuss or rule on the application of the Brown-Olds reimbursement remedy to hiring practice violations.

Ultimate disposition of the case is significant because the Mountain-Pacific decision has been the guide in the wholesale hiring revisions the industry has made. It was the NLRB's first big attempt to stamp out illegal closed shop practices in construction.

The board attempted to force an end to closed shops by a specific ban on union referral or hiring hall provisions that favor union members to the exclusion of nonunion members, thus resulting in a closed shop. This violates the law because no one can be compelled to join a union to get a job, although he may later have to join a union to hold the job.

To accomplish its purpose, the board said it would consider illegal on its face any contract provision that does not specifically provide for selection of job applicants on a nondiscriminatory basis, or for retention by the employer of the right to reject applicants referred by a union, or for public posting of the hiring provisions.

This approach was rejected by board member Abe Murdock in his dissent. He said the mere absence of a guarantee that a hiring hall will be run in a nondiscriminatory manner is not enough to make a hiring arrangement illegal and that the board cannot use such a presumption to shift the burden of proof on discrimination from the general counsel to the union and employer.

The Ninth Circuit Court has followed Mr. Murdock's reasoning.

In sending the case back to the board, it made these rulings and observations:

- "The hiring hall is legal and has always been held so."
- ". . . a contract which contains discriminatory provisions is illegal per se."
- "It is also patent that a contract which is fair on its face is not unlawful in and of itself simply because it does not contain clauses prohibitory of illegal action."
- Hiring violations can occur "with or without a contract" and "it matters not whether the provisions now required by the board are written into" the contract.
- The board can decide to give "peculiar weight to certain evidence," such as contract language, and, if it does so, this becomes a rule of evidence, not of law. Discrimination in hiring is a "question of fact" on which all the evidence, both inside and outside the contract, has a bearing.

It is now up to the board to decide how to amend its Mountain-Pacific decision within the framework of the court's ruling.

Labor in Brief . . .

- **Tradesmen donate labor**—Ashland Building Trades Council, in Kentucky, agreed to furnish craftsmen and labor free to build the first new building at Boyd County Boys' Farm. Boyd Fiscal Court pledged $25,000 for materials if the work was done free.

- **Labor's power defended**—George Meany, president of the AFL-CIO, claims labor seeks "a balance of power in the economic and political life of the nation." In a published defense of labor's growing strength, the labor leader concedes that labor has gained power but contends that this power has been used to "raise the American standard of living."

- **Cape Canaveral struck**—A strike by operating engineers has paralyzed all construction at Cape Canaveral, Fla. The strikers are reportedly demanding double-time for all overtime work. One contractor estimates "thousands" of workers are affected by the strike.

- **Roofers end strike**—The roofers union has ended a 2½-week strike in Marin County, San Francisco, against the Associated Roofing Contractors of the Bay Area Counties, Inc. They signed a one-year contract for a 20-cent hourly raise. Another roofers local is still on strike in Monterey and Santa Cruz counties.

- **Benefits for strikers**—Massachusetts' legislature has passed a bill to give strikers unemployment compensation benefits after a strike is six weeks old.

- **Joint picketing**—A temporary court order has forced Dallas building trades unions to lift a combined picket line that shut down construction of a refrigerated warehouse. The unions had accused Dallas Plumbing Co., a nonunion subcontractor, of paying wages below union scale. The council is still joint picketing against McFadden and Miller Construction Co. for paying below union scale.

Payroll Taxes: They're Universal,

What state compensation laws cover . . .

	Unemployment Compensation Insurance				Workmen's Compensation Insurance		
	Tax Rate (%)		Taxable	Minimum Size of Firm Covered			Minimum Size Firm Covered
State	Max.	Min.	Wages	(by no. employees)	Required?	Type	(by no. employees)
Alabama	2.7	0.5	$3,000	4 in 20 weeks*	P	p or s	8
Alaska	2.7	2.7	4,200	1 any time	C	p or s	1 or more
Arizona	2.7	0.1	3,000	3 in 20 weeks	C	p, sf or s	3
Arkansas	2.7	0.1	3,000	1 in 10 days	C	p or s	1 or more
Calif.	2.7	0	3,000	1 and $100 any quarter	C	p, sf or s	1 or more
Colorado	2.7	0	3,000	4 in 20 weeks	E	p, sf or s	4
Conn.	2.7	0.25	3,000	3 in 13 weeks*	P	p or s	3
Delaware	2.7	0.1	3,600	1 in 20 weeks	C	p or s	3
D. C.	3.0	0.1	3,000	1 any time	C	p or s	1 or more
Florida	2.9	0	3,000	4 in 20 weeks or $6,000 any ¼*	E	p or s	3
Georgia	2.7	0.25	3,000	4 in 20 weeks*	E	p or s	10
Hawaii	2.7	0	3,000	1 any time	C	p or s	1 or more
Idaho	2.7	0.3	3,000	1 and $150 any quarter	C	sf or s	1 or more
Illinois	3.25	0.25	3,000	4 in 20 weeks*	C	p or s	1 or more
Indiana	2.7	0.1	3,000	4 in 20 weeks*	E	p or s	1 or more
Iowa	2.7	0	3,000	4 in 20 weeks*	E	p or s	1 or more
Kansas	2.7	0	3,000	4 in 20 weeks or 25 in 1 week*	P	p or s	1 or more
Kentucky	4.2	0	3,000	4 in 20 weeks*	E	p, sf or s	3
La.	2.7	0.1	3,000	4 in 20 weeks*	E	p or s	1 or more
Maine	2.7	0.5	3,000	4 in 20 weeks*	E	p or s	5
Maryland	2.7	0.2	3,000	1 any time*	C	p, sf or s	1 or more
Mass.	2.7	0.5	3,000	1 in 13 weeks*	C	p or s	1 or more
Michigan	4.0	0	3,000	4 in 20 weeks*	C	p, sf or s	3
Minnesota	3.0	0.1	3,000	4 in 20 weeks*	C	p or s	1 or more
Miss.	2.7	0.6	3,000	4 in 20 weeks*	C	p or s	8
Missouri	3.6	0	3,000	4 in 20 weeks*	E	p or s	1 or more
Montana	2.7	0.5	3,000	1 in 20 weeks or $500 a year	E	p, sf or s	1 or more
Nebraska	2.7	0.1	3,000	4 in 20 weeks or $10,000 any ¼*	E	p or s	1 or more
Nevada	2.7	0.1	3,600	1 and $225 any quarter*	C	sf	2
N. H.	2.7	0.5	3,000	4 in 20 weeks*	C	p or s	5
N. J.	3.6	0.3	3,000	4 in 20 weeks	E	p or s	1 or more
N. M.	2.7	0.1	3,000	1 and $450 any ¼ or 2 in 13 weeks	E	p, s or cr	4
New York	3.2	0	3,000	2 any time*	C	p, sf or s	3
N. C.	3.7	0.1	3,000	4 in 20 weeks*	E	p, s or ma	5
N. D.	2.7	0.1	3,000	4 in 20 weeks*	C	sf	1 or more
Ohio	3.2	0.1	3,000	3 any time	C	sf or s	3
Oklahoma	2.7	0.2	3,000	4 in 20 weeks	C	p, sf or s	2
Oregon	2.7	0.6	3,600	2 in 6 weeks any ¼ and $1,800 a yr.	E	sf	1 or more
Pa.	2.7	0.5	3,000	1 any time	E	p, sf or s	1 or more
P. R.	3.0	3.0	3,000	4 on any day	..	....	....
R. I.	2.7	1.3	3,600	1 any time	C	p or s	1 or more
S. C.	2.7	0.25	3,000	4 in 20 weeks	E	p, s or ma	15
S. D.	2.7	0	3,000	4 in 20 weeks or $24,000 any year	C	p or s	1 or more
Tennessee	3.0	0.5	3,000	4 in 20 weeks*	E	p or s	5
Texas	2.7	0.1	3,000	4 in 20 weeks*	E	p or ma	3
Utah	2.7	1.0	3,000	1 and $140 any quarter*	C	p, sf or s	1 or more
Vermont	2.7	0.2	3,000	4 in 20 weeks*	E	p or s	5
Virginia	2.7	0.1	3,000	4 in 20 weeks*	P	p or s	7
Washington	2.7	....	3,000	1 any time*	C	sf	1 or more
W. V.	2.7	0	3,000	4 in 20 weeks*	E	sf or s	1 or more
Wisconsin	4.0	0	3,000	4 in 20 weeks or $10,000 any ¼	E	p or s	3
Wyoming	2.7	0	3,000	1 and $500 any year	C	sf	1 or more

** or 1 any time and subject to Federal Unemployment Tax Act.*

P—presumptive
C—compulsory
E—elective
p—private insurance
sf—state fund
s—self-insurance
cr—court release
ma—mutual association

but They Vary

(This is the third of a series of articles on state labor laws.)

Federal interference is often the scapegoat in employer complaints about the red tape and mounting costs of doing business. But the states also play a big role and one of the significant areas is the field of payroll taxes.

The pattern has been pretty well set ever since the days of the New Deal—taxes for unemployment, compulsory payments for workmen's compensation, and state income tax deductions heaped on top of federal income and social security taxes.

The burden promises to grow heavier as states continue their search for new sources of income and for more and larger benefits for their employed citizens. Some contractors already are saying they can't save enough through accident prevention, for example, to cover the mounting costs of workmen's compensation.

Of all the state taxes that are an incident of employment, those supporting the unemployment insurance and workmen's compensation systems have become most universally accepted. All 50 states and the District of Columbia have legislation providing for these benefits.

The states' unemployment tax acts, correlated with the Federal Unemployment Tax Act, are part of the Federal Social Security Plan adopted in 1935. Federal unemployment taxes are collected by the federal government but administered by the states.

The act imposes a 3% tax on employers of four or more persons on a day in each of 20 different weeks during a taxable year. The tax applies only to the first $3,000 of each employee's wages.

The federal law has led to a great uniformity of state unemployment compensation laws (see table). One reason for this is a provision in the federal legislation that allows employers to credit their state unemployment tax against the tax they owe to the federal government, up to 90% of the amount owed for the federal tax. This provision was intended to encourage the states to pass their own unemployment tax acts, without imposing a double tax burden upon employers.

The result is a standard unadjusted tax rate of 2.7% in every state but North Dakota, where it is 3.7%. (Puerto Rico's standard rate is 3.0%). With a 2.7% state rate, the employer usually can deduct all of this state tax from the federal tax (2.7% is 90% of 3%).

The table shows states with unemployment tax rates ranging from a minimum of zero to a maximum 4.2%. These deviations from the standard rate are caused by "merit rating" systems, which most states have, and by changes in the solvency of state reserves. Merit rating provides that an employer's tax rate may be reduced, or raised, based upon his "employment experience"—the stability of his labor force.

Both the federal and state unemployment taxes are imposed on the employer. In addition, six states—Alabama, Alaska, California, New Jersey, New York and Rhode Island—tax employees at rates from 0.1% to 1%.

State laws on workmen's compensation insurance, though as universal as unemployment compensation laws, are not nearly so uniform. The amounts and types of benefits paid under these laws vary widely from state to state.

But there is some similarity in the requirements placed upon employers and employees by the various states.

Workmen's compensation laws fall into one of three categories—compulsory, elective or presumptive.

Under compulsory insurance, employers and their employees, in certain occupations, must accept coverage.

Under elective insurance, both the employer and employee have the option to accept or reject coverage. If the employer rejects coverage, he abandons three common law defenses: assumption of risk, negligence of fellow employees of the injured workman and contributory negligence on the part of the injured workman.

If the employee rejects coverage, he may gain wider latitude in recovering damages should he be hurt, but he may lose the defense of contributory negligence. This means that if he contributed to the accident, he may be unable to recover damages at common law, though he would have been able to do so under workmen's compensation.

The third type of coverage is presumptive. Here it is presumed the employee accepts coverage unless he signs a waiver to the contrary. As before, if he rejects coverage, he may then sue under common law.

There are four types of insurance available to employers:

- **Private insurance,** taken from a recognized insurance company.
- **State fund,** where the employer

—(*Continued p. 313*)

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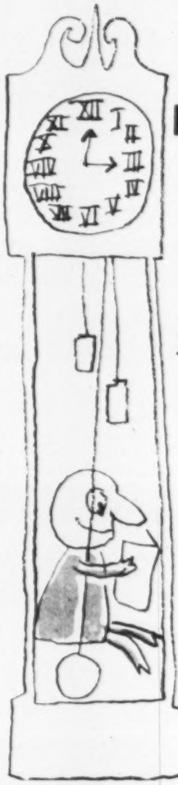
seem to
have the
most time
to read?



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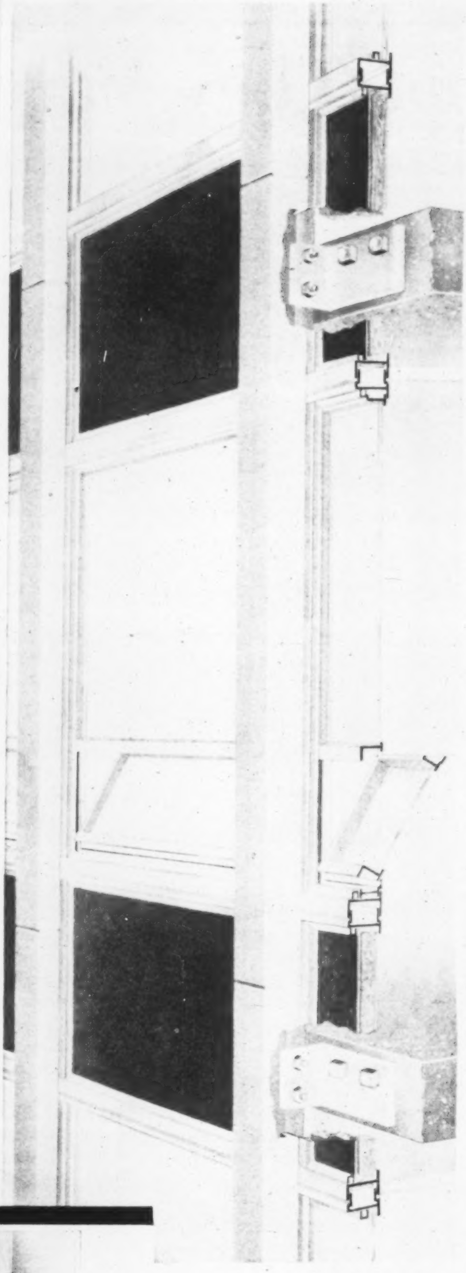

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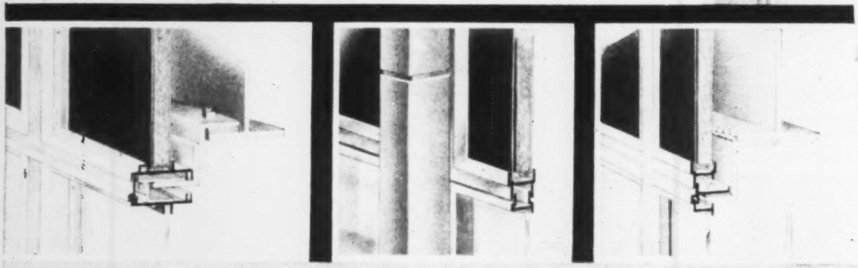

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subscribes to a state workmen's compensation fund.

- **Mutual association,** where a group of employers insure themselves.
- **Self-insurance,** where the employer proves to the state that he has enough funds in reserve to pay damage claims against him. If the employer's home office is not within the state, he may have to establish a deposit with the state.

Another tax with its counterpart at the local level is the income tax. At present, 18 states require employers to withhold a state income tax from employees' wages. Two others—California and Iowa—require a withholding tax on non-resident employees only.

State withholding taxes are also required on sick pay. Six states require income tax to be withheld on all sick pay, one requires withholding only on non-residents' sick pay, and nine states make it optional for the employer to withold a tax on sick pay.

AGC and Carpenters May End Long Alaska Strike

The Alaska Council of Carpenters and Alaska Chapter of Associated General Contractors have reached tentative agreement on a new three-year labor contract. A statewide strike has tied up construction work for 11 weeks.

The contract is subject to ratification by the local unions, which have rejected three previous proposals. It calls for a wage increase of 30 cents an hour this year, 25 cents next year and 23 cents in 1961. This year's increase would be retroactive to March 15, when the last contract expired.

The dispute over travel pay would be arbitrated and the results would become effective next March 15. Until then, travel pay would range up to $6.75 a day, depending on the distance involved.

It is expected that work will not be resumed this year on some projects, because of the imminence of winter, even if the contract is ratified. Work will be pushed on other projects to get them under cover for winter.

A Steelworkers Local Pickets Building Trades

Steelworkers picketed the Building Trades Convention of the AFL-CIO, in San Francisco last week to protest other unions crossing its picket line at the Pabco Division of Fibreboard Paper Products Corp., Emeryville, Calif.

Steelworkers lost plant maintenance work at Pabco to the building trades when Pabco signed a contract giving the work to Fluor Maintenance, Inc., of Los Angeles.

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Electrical Work at the Lewiston Power Plant, Lewiston, Niagara County, New York

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NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the electrical work at the Lewiston Power Plant and appurtenant works, located in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 6th day of October, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The work includes but is not limited to the installation of Authority furnished equipment and materials consisting of all generator auxiliaries, isolated phase bus, secondary unit substations, motor control centers, main switchboards and appurtenances, control batteries and associated equipment, lighting systems, and insulated wire and cable; the furnishing and installing of miscellaneous electrical equipment, conduit and grounding, and cable trays; and making electrical connections to equipment of a basically non-electrical nature such as pumps, air compressors, heating, air conditioning and ventilating fans including electric duct heaters, hoists and elevators, transformer fire protection equipment and other equipment installed or furnished and installed by Others.

The work shall be completed on or before July 2, 1962.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Twenty Dollars ($20.00) per initial set of contract documents, and Ten Dollars ($10.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-N-25031

Bids: October 1, 1959.

Relocation of Whirlpool Street and Utilities in Niagara Falls, Niagara County, New York

POWER AUTHORITY OF THE STATE OF NEW YORK
NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
SPECIFICATION NO. PA-N-23030
NIAGARA CONTRACT N-24

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the relocation of utilities and electrical work and Whirlpool Street in Niagara Falls, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 1st day of October, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:
Estimated:

24,000 cu. yds.—Excavation
7,700 lin. ft.—Vitrified clay drain pipe, 4" dia.
4,700 cu. yds.—Foundation course crushed rock
4,100 cu. yds.—Reinforced concrete base course
7,700 lin. ft.—Granite curb
2,900 tons—Stone filled sheet asphalt and binder
3,800 lin. ft.—Double beam guard rail
4,050 lin. ft.—Cast iron pipe, 6" to 20" dia.
4,420 lin. ft.—Vitrified clay sewer pipe 8" to 48" dia.
17,600 lin. ft.—Installing 15 kv cable, 250 mcm and 500 mcm

The work shall be completed on or before May 15, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, upon application and pre-payment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the Offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-N-23030

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5237) will be received at Huron, South Dakota, until 10 a.m., Central Standard Time, October 29, 1959, for furnishing labor and materials for Stage 04 Additions to Granite Falls Substation, Transmission Division, South Dakota, Missouri River Basin Project. Location near Granite Falls, Minnesota. Principal items are 240 cu. yds. concrete; 49,000 pounds, furnishing and erecting steel structures; various, installing major electrical equipment; various, furnishing and installing electrical materials; and other work. Completion time 300 days. For Particulars, address Bureau of Reclamation, P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5234) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, November 10, 1959, for furnishing eight (8), 155,500 horsepower, 150 rpm, vertical-shaft, single runner, Francis type, hydraulic turbines for Glen Canyon Power Plant, Glen Canyon Unit, Arizona-Utah, Colorado River Storage Project. Delivery is required within 1,480 days. For particulars, Address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS

of

Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere.

◆

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

◆

The cost is only $2.40 a line per issue.

Bids: Prequalification: October 15, 1959.
Bids: November 1959

Feeder Road Program Ministry of Public Works Republic of El Salvador

Bids: November 1959
Prequalification: October 15, 1959
Prequalification Questionnaire
NOTICE TO CONTRACTORS

The Ministry of Public Works of the Republic of El Salvador advises that during the month of November, 1959, the first bidding will take place for the construction of a major portion of the proposed Feeder Road Program of the Country. The Specifications, Plans and Contract Documents will be available for sale in El Salvador on September 21, 1959.

All Contractors interested in taking part in this bidding and in future biddings are requested to obtain copies of the Prequalification Questionnaire which is available in the Office of the Proveedor Especifico de Obras Publicas, Edificio Morazan, 8a C. P., San Salvador, El Salvador, C. A. These questionnaires must be completed and returned to the Proveedor not later than October 15, 1959.

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR
C. A.

Bids: October 19, 1959.

Republic of Pakistan Mangla Dam Project

NOTICE TO CIVIL ENGINEERING CONTRACTORS

The West Pakistan Water and Power Development Authority expect to issue tender documents before the end of 1959 for the construction of Mangla Dam, an earth fill embankment some 350 feet in height, 14,000 feet long and containing approximately 70 million cubic yards of embankment material.

Civil Engineering Contractors interested in tendering for this contract are invited to apply at once for a Summarised Description of the Works either to:

The Chief Engineer,
Mangla Dam Project,
P. O. Mangla Headworks,
District Jhelum,
West Pakistan,

or to the Consulting Engineers,

Messrs. Binnie, Deacon & Gourley,
Artillery House,
Artillery Row,
London, S. W. 1.
England.

Contractors who, after studying the Summarised Description, wish to be placed on the list of Tenderers, should send an application, in English, to the Consulting Engineers, giving details of their resources, and of their experience in large scale earth fill dam construction, including the value and description of Works which they have carried out, time of construction, and the names of the Employers and Consulting Engineers responsible.

Applications to be placed on the list of Tenderers must reach the Consulting Engineers not later than 19th October, 1959. Those firms considered to have sufficient experience and resources will be sent the tender documents in due course.

Bids: September 30, 1959.

Construction of Sanitary Intercepting Sewer

CITY OF ITHACA, NEW YORK

Separate bids for the construction of a Sanitary Intercepting Sewer on West Hill and for additions to the Sewage Treatment Plant, City of Ithaca, New York, will be received by the City Clerk in the City Council Chambers, City of Ithaca until 4:30 P.M. September 30, 1959, and then at said time and place publicly opened and read aloud.

WEST HILL INTERCEPTING SEWER: The work to be performed under this Contract consists of the installation of 18", 21" and 24" diameter sewers on the east and west banks of Cayuga Inlet.

SEWAGE TREATMENT PLANT ADDITIONS: The proposed work is designated as: Contract #1, "Tank Construction", Contract #2, "General Construction" and Contract #3, "Electrical Construction".

Under Contract #1, "Tank Construction", the following units are to be furnished and erected: One (1) steel grit chamber, two (2) 85' diameter steel primary settling tanks, two (2) 122' diameter steel trickling filter tanks.

The work to be performed under Contract #2, "General Construction", consists of remodeling the existing primary sewage treatment plant, replacing the existing electrical and gas driven raw sewage lift pumps with new units; reconstructing the existing primary tanks into final settling tanks; construction of one (1) new final settling tank; construction of piping between the new steel tanks (constructed under Contract #1), and the existing facilities; construction of the recirculation pump control building complete with pumping equipment; installing rock media and distributor mechanisms in the two trickling filter tanks; installing sludge pumping equipmen and piping in existing building; revising existing chlorinator storage room and installing certain equipment and other miscellaneous items in connection with the construction of a 4,000,000 gallon per day average flow secondary sewage treatment plant.

The work to be performed under Contract #3, "Electrical Construction", consists of construction of a new electrical aerial distribution system, all electrical work in connection with the new treatment units, and revision to the electrical equipment in the existing Control Building.

The Information for Bidders, Plans and Specifications may be examined at the office of the City Engineer, City Hall, Ithaca, New York, or at the office of Stearns & Wheler, Civil and Sanitary Engineers, 99 Albany Street, Cazenovia, New York. Copies of the Plans and Specifications may be obtained at said office of the City Engineer.

Plans and Specifications for the West Hill Intercepting Sewer may be obtained upon payment of $10.00 for each set. Copies of the Sewage Treatment plant Plans and Specifications, which includes Contract #1, Contract #2 and Contract #3, complete in one set, may be obtained upon payment of $35.00 for each set. Any bidder returning plans and specifications in good condition within fifteen days after receipt of bids, will be refunded his payment and any non-bidder, upon so returning such set, will be refunded one-half of his payment.

The City of Ithaca reserves the right to reject any and all bids, and to waive informalities.

Financial assistance will be obtained for these projects from the United States Department of Health, Education and Welfare. The final awarding of each Contract is subject to the approval of the United States Department of Health, Education and Welfare; Public Health Service.

George A. Blean
City Clerk
Ithaca, New York

Bids: October 6 & October 20, 1959

The Port of New York Authority Contract PN-140.026 and Contract BP-180.001

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y. until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract PN-140.026—Port Newark—Buildings 178 thru 182 and Wharf—Sealing Bulkhead—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, October 6, 1959.

Contract BP-180.001—Brooklyn-Port Authority Piers—Pier Construction at Foot of Pacific Street—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, October 20, 1959.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount of each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
New York, September 17, 1959.

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

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$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

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Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

OPPORTUNITY FOR ASSOCIATES

1. Complete charge of your own Division.
2. Drawing account, Equal income sharing with management. *Plus* income from your own investment.

ASSOCIATES needed in the following divisions: PETROLEUM, CHEMICAL & PETRO-CHEMICAL, GEOLOGIST & MINING, SANITATION & WATER SUPPLY, INDUSTRIAL ENGINEERING, MECHANICAL, ELECTRICAL, ARCHITECTURAL-ENGINEERING, CONSTRUCTION ENGINEERS, (2 required). Both domestic and foreign work.

AGE: 40 to 65. President, Executive Vice President, and Vice-President level.

MINIMUM INVESTMENT required $15,000.00 Principal enjoys TOP recognition in world affairs.

JOB HUNTERS NEED NOT APPLY.

Send complete resume to:

P-2588, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ENGINEER

Structural or mechanical graduate engineer with U.S. experience in design of gates for hydroelectric power plants, spillways and outlet works. Should be capable of making preliminary estimates and determining gate type selections. At least five years of experience desired. A younger man to work under supervision. Send complete detailed resume of experience and qualifications to Personnel Department.

HARZA ENGINEERING COMPANY
400 W. Madison St., Chicago 6, Illinois

PLANNER

Community Planner I. $5244-$6036. Starting salary above minimum rate for outstanding qualifications. Longevity rates above maximum salary for long service. Degree in City Planning, Architecture, Engineering or related fields. To participate in the preparation of the various aspects of urban renewal plans.

CITY PERSONNEL DEPARTMENT
404 City County Bldg., Madison 9, Wis.

CHIEF ESTIMATOR

Immediate opening available for position as Chief Estimator of Building Division. Applicants must be thoroughly experienced and capable in all phases of building construction and ready to assume immediate and complete charge of Estimating Department. Send complete resume of qualifications attention R. W. Card, P. O. Box 191. PERINI CORPORATION, FRAMINGHAM, MASSACHUSETTS.

DISTRIBUTOR AVAILABLE

DISTRIBUTOR OF COMPLETE LINE HEAVY DUTY TRUCK AND TRACK MOUNTED EXCAVATORS IN NEW YORK CITY AREA INTERESTED TAKING ON ADDITIONAL EQUIPMENT USED BY HEAVY CONSTRUCTION INDUSTRY—

RA-2115, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CHIEF CIVIL ENGINEER

(Department Head)

Must be graduate civil engineer with state registration in civil engineering. Minimum five years experience in the supervising of thirty or more engineers, designers and draftsmen.

This position is with one of the leading engineering companies in southern California. It calls for an engineer with a heavy design background and organizational ability. Excellent salary for right man.

SENIOR CIVIL ENGINEERS

(Far East Assignment)

Experienced hydrologists or possibly hydroelectric engineers with good background in river basin development. Person selected must be able to speak, read and write both French and English.

Applicant must go in single status as no family housing available for either position.

Airmail Resume and snapshot to:

P-2514, Engineering News-Record
1125 W. 6th St., Los Angeles 17, Calif.

CIVIL ENGINEER

OVERSEAS

ON

HIGHWAY PROJECT IN THAILAND

Require recent graduate Civil Engineer with some construction inspection and survey experience. Twenty month contract in bachelor status. Must pass physical examination and security investigation.

- EXCELLENT SALARY
- OVERSEAS BONUS
- COMPLETION BONUS
- EXTRA VACATION ALLOWANCE
- MEDICAL CARE & INSURANCE

Write fully, include complete salary information to:

SVERDRUP & PARCEL ENGINEERING CO.
915 Olive St., St. Louis 1, Missouri

The Commonwealth of Pennsylvania Seeks

HIGHWAY & BRIDGE DESIGNERS

with C.E. degree and 1 to 5 years of design experience.

• JUNIOR DESIGNERS • DESIGNERS • SQUAD LEADERS • SUPERVISORS

Salaries from $5500 to $9000 per year based upon qualifications.

Make application immediately

PERSONNEL, PA. HWYS. DEPT., HARRISBURG, PA.

CHIEF STRUCTURAL ENGINEER
Wanted by Major Consulting Firm

Chief Structural Engineer
Experienced in Bridges and Buildings

Immediate Employment

Clarkeson Engineering Company, Inc.
285 Columbus Avenue
Boston 16, Massachusetts
CO 6-7720

POWERHOUSE SUPERINTENDENT

Superintendent of power plant located in Iran. Must be university graduate, with degrees in Electrical Engineering preferred, or have the equivalent in engineering experience. Should have at least two years experience as service operator in hydroelectric powerhouse. Working knowledge of plant equipment necessary. Complete responsibility for disassembly repairs and reassembly of major equipment. Salary commensurate with ability. Living allowance and other fringe benefits. Initial two year contract with possibility of renewal. Send complete detailed resume of experience and qualifications to Personnel Department.

HARZA ENGINEERING COMPANY
400 W. Madison St., Chicago 6, Illinois

GENERAL FOREMAN

Major Steel Company has need for top notch man with college background to supervise construction crews installing fabricated products in Midatlantic area. Projects include Tunneling, Jacking and Boring. Attractive starting salary with company car, expenses and bonus plan.

P-2188, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St

• POSITIONS VACANT

Asst. Prof.—To teach undergrad. courses in transportation, surveying, and fluid mechanics. Salary open. Civil Eng., University of No. Dak., Grand Forks.

Wanted: Young graduate Civil or Hydraulic Engineer interested in overseas assignment with consulting firm. State education, background and experience. Reply fully to P-2359, Engineering News-Record.

Railroad Track Construction Engineer-Estimator must be capable of bidding and executing work for Private Track Contractor fully equipped with modern track laying equipment. State background, experience and salary required. Excellent opportunity for right man. Reply to: P.O. Box 274, Cincinnati 14, Ohio.

Job Superintendent—minimum 5 years experience as superintendent or carpenter foreman on concrete projects preferably in water and sewage tank field. Gunite experience helpful but not essential. Travel required. Submit resume with references, recent photograph, and salary requirements. Reply to P-2183, Engineering News-Record.

Wanted—Experienced Party Chief, licensed land surveyor preferred. Excellent opportunity with well known Consulting Firm in Illinois. State education, experience and required salary. Reply to P-2292, Engineering News-Record.

Highway Design Engineer—Soils. Engineering background. Minimum 3 years experience. Permanent position Southern Connecticut. Send resume of experience, references and salary requirements. P-2562, Engineering News-Record.

Civil Engineers experienced in design of sanitary engineering projects or in related fields, including one experienced and qualified specification writer. Mid-West location. Please send complete resume. P-2556, Engineering News-Record.

• POSITIONS VACANT

We are seeking Engineers and Construction men on the Vice-President level for International operations. Minimum investment opportunity $15,000.00 if rigid qualifications are met. Salary and profit sharing plan. Send resume to P.O. Box 722, University Station, Montreal, Quebec.

Construction Superintendents—Graduate Engineers under 45. Experience in large earthmoving operations—highway, airport and dams—on production basis. Permanent position growing company in Southeast. Submit detailed resume experience, references, availability, salary desired, personal data to P.O. Box 2611, Montgomery, Alabama.

Engineer, versed in design and practical application of form work for reinforced concrete buildings, principally open centering for pan construction. Location southeast. Advise education, experience, references, availability and salary expected. P-2609, Engineering News-Record.

Civil Engineer: Registered in Illinois. 40 years minimum age. Experienced in sewer, water, pavement design, estimating and specification writing. Submit resume and salary requirements. Chicago area location. P-2591, Engineering News-Record.

Sales Manager—Established manufacturer of residential and light commercial construction forms has opening for aggressive sales manager to supervise sales on national scale. Must have experience selling contractors and builders, and ability to establish new sales and distribution outlets. Send full resume for personal interview. P-2594, Engineering News-Record.

• POSITIONS WANTED

Executive, female, Legal & Const. Background. Exp. Administrator, Mgr. Govt. Contracts Etc. PW-2521, Engineering News-Record.

Civil Engineer, BSCE, 36, married. Ten years structural design, contract management and administration. Gov't and private industry. Willing to travel some, wants to change. PW-2515, Engineering News-Record.

Construction Superintendent: Age 52. 30 years of heavy construction—prefer S.E. location—Best References. PW-2510, Engineering News-Record.

Rock man experienced free to travel. PW-2474, Engineering News-Record.

Project Manager hvy. const. B.S.C.E. Highways, flood control, etc. presently employed. Prefer West Coast. PW-2520, Engineering News-Record.

Purchasing: General Construction. Excellent experience large & small jobs. Well versed in office mgmt, equip. and material procurement. Some experience with state and federal contracts. PW-2424, Engineering News-Record.

Concrete draftsman-checker, power plant exp. wants to locate Ga. or Miss. Employed in Ala. PW-2553, Engineering News-Record.

Construction Manager. Architect-Engineers. Owners Representative. Age 48, P.E. 30 years experience all types of construction. Previous background manager, Chief Engineer, General Superintendent, Chief estimator. Since 1955 have had responsible supervision and field management of thirty-million dollars worth of work. Will relocate. PW-2554, Engineering News-Record.

Seek Career Challenge to further outstndg. capabilities. Ten yrs. experience all phases Administration, Payroll, Cost Control, Purchasing, Property Accountability. Presently employed, general contractor—dead end. Author Administrative Procedure Manual. Consider foreign assignment. PW-2493, Engineering News-Record.

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PROPOSAL COLUMN OF
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THIS WEEK AND EVERY WEEK

• POSITIONS WANTED

Construction Executive or Project Mgr. 25 years experience covers Concrete, Earth Dams, Power houses, Bridges, Tunnels and Marine Construction. Qualified to Estimate, Plan and Construct in the U. S., South Amer. and Middle East. PW-2271, Engineering News-Record.

Project Manager—Overseas—Highway Construction—Available for interview New York after October 22nd. Will supply entire crew. Superintendent, Office Mgr. Ass't Supt. Master Mechanic, Mechanics, Bridge Foreman, Project Engineer, Grade Foreman, Pipe Foreman and Operators. Entire crew young and ambitious with minimum 7 years highway and heavy construction experience. PW-2339, Engineering News-Record.

Executive, Coordinator, Organizer, Buildings, Heavy, Prestressed. Qualified to run a large project, Division or Business. Wish to contact large volume contractors. Salary $15-20,000. C. O. Sutherland, 47 Rich Ave., Mount Vernon, N. Y. Telephone MO 4-7927.

Struct. engineer, registered, 7 yrs. design exp. in highway bridges, knowledge prestr. conc. design, good references. PW-2582, Engineering News-Record.

General Superintendent or Project Manager. Age 48, Married, Residence, Danville, Ill., Civil Engineering education, 20 years executive experience, State, Super and Turnpike highway and air port bases. Excellent proven records. Minimum salary $12,500.00. Available Oct. 1st, 1959. PW-2575, Engineering News-Record.

Construction Exec.—C.E., young, aggressive, proven record on tough jobs, diversified experience. Employed, desires associate top-notch med. or small size constr. or engr. firm. Investment considered. PW-2568, Engineering News-Record.

Hydraulic engineer; over 20 years experience (5 foreign) on all types river developments including irrigation, hydroelectric, storage, pumping, supply, control, channels, drainage. Writes, reads, converses fluently in Spanish. PW-2610, Engineering News-Record.

Civil Engineer—BSCE—licensed. Extensive Municipal Experience in Administration, Sewers, Highways, etc. PW-2604, Engineering News-Record.

Foreman - Superintendent - Estimator - Party Chief 25 years exp. Good background roads, industrial and municipal, penetration and plant mix. Underground telephone and electric conduit. Full charge. PW-2603, Engineering News-Record.

Estimator and Project Manager. 8 years experience in industrial, commercial and institutional construction. PW-2602, Engineering News-Record.

C.E. or Structural Engr. 9 years total experience. Wide experience in design of concrete, timber, and steel structures under dynamic lateral loads. 3 years experience Municipal Engineering, including complete design of storm drain. Honor graduate B.S. in C.E. Masters in Structures & Hydraulics. Available Sept. 20. Resume on request. Willing to relocate. $600 minimum. P.O. Box 94, Skellytown, Texas.

Party chief or locating engineer on Railroad or Highway-Transitman also available. PW-2612, Engineering News-Record.

Purchasing-Material Control. 15 years Construction Experience Steam & Hydro Electric Generating Plants. 5 years other construction. Buffalo area preferred. PW-2598, Engineering News-Record.

Project-Manager, 22 Years Exp. Heavy constr. U.S. and O.S. Top references. PW-2596, Engineering News-Record.

Attention American Manufacturers wishing to locate in Britain for the Commonwealth & European Markets: British born, American trained executive: sales, administration & engineering: excellent connections in construction equipment field in both countries: will set up American organization in Britain: inquiries treated with confidence: principals only. PW-2595, Engineering News-Record.

Field-Office Engineer. 11 years experience in industrial and heavy construction including chemical and powerhouse. Know cost, estimate, scheduling, subcontract preparation, bids, negotiation and office and field administration, claims and general engineering. Available for domestic or foreign. Prefer deep south. PW-2586, Engineering News-Record.

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$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

RANSOME DUAL DRUM PAVER

Model 34 E with Hercules HXE gasoline engine in excellent condition—ready to work. $21,500

M-W EQUIPMENT CO.
Hunting Park Ave. & Fox St., Phila. 29, Pa.
BAldwin 6-2600

FOR SALE

Highway and Airport

PAVING FORMS

Sizes: 9", 15", 16", 17", 19", 21"

NWE, Box 1392, Rapid City, S. Dak.

WANTED

3—Wire Rope (Blasting Mats)

3/4" rope—approx. 15' x 15'

Write:

LYCOMING CONSTRUCTION CO., INC.
127 Susquehanna St. Williamsport, Pa.

L-6 White blacktop plant with bagging scale and hopper. Includes 4000 gallon tank with 2" heating coils $2,000.00

Farrell Bacon Jaw Crusher 24" x 13" x 14" $2,000.00

TACONIC Equipment Corp.
50 Haarlem Ave. White Plains, N. Y.
Tel. WHite Plains 9-2110

25-TON LOCOMOTIVE CRANE

Industrial Brown Hoist, Model 5, 1944. D-17,000 Cat Diesel, 50 foot boom. $17,500.

R. J. KEHOE CO.,
1 E. 42nd St., N.Y.C.—17.

GOOD BARGAIN

8 Mod. R-27 Rear Dump Euclids
1 Mod. 1055 P & H Diesel Shovel
2 Mod. TS-24 Euclid Scrapers
3 Mod. DW-21 Cat Scrapers
2 Mod. "B" LeTourneau Scrapers
1 Mod. W-60 Koehring Dumpster

STANDARD EQUIPMENT CO.
340 Pierce St. Kingston, Pa.
Phone BUtler 8-1426

MANITOWOC 3500, 1949, crawler

38" x 18' thick. 80' boom, 2 1/2 yd drag-line bucket, air control. $37,500.

R. J. KEHOE CO.,
1 E. 42nd St., N.Y.C.—17

FOR SALE

48B Bucyrus Erie Shovel, diesel 2 1/2 c.y.
3540' 9" x 9" road forms
1800' 11" x 13" airport forms
2500' 16" x 12" airport forms

WILLIAMS CONSTRUCTION COMPANY
Box 5045 Balto. 20, Md. Murdock 6-1000

SPECIAL

FOR SALE OR RENT

2 - Bucyrus-Erie Model 71-B shovels

complete—New—June 1958

TIP-TOP SHAPE

Located Niagara Falls, N. Y.

EASTERN EQUIPMENT SALES, INC.
Springfield, Mass. *REpublic 7-2656*
Orange, Conn. *SYcamore 9-2384*

ROAD EQUIPMENT

1—Heltzel Flex-Plane Finishing Machine 12'—$6,500.00.

1—Koehring Longitudinal Finishing Machine —$4,500.00.

1—Cleveland Formgrader—$2,500.00.

All of the above used on one (1) job only.

CONSTRUCTORS EQUIPMENT CORP.
345 N. 57th St. Phila., Pa. SH 8-4475

FOR SALE BY OWNER

PURCHASED NEW FOR JOB NOW BEING COMPLETED

NORTHWEST 80-D SHOVEL, also dragline attachments & buckets.
TELSMITH JAW CRUSHER 25" x 36"
TELSMITH 13-B CRUSHER
TELSMITH COARSE MATERIAL SCREW WASHER
84" TELSMITH SUPER SCRUBBER
SYNTRON GRIZZLY FEEDER F-86
10" PEERLESS TURBINE PUMP, 150 hp., 200 GPM

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Bethlehem Steel Co. 159
Blaw-Knox Co., Construction Equipment Div. 231
Borden Metal Products Co. 81
Bristol Steel & Iron Works, Inc 28
Buck Equipment Corp. 172
Bucyrus-Erie Co. 53
Butler Bin Company 237
Butler Manufacturing Company 233

The Philip Carey Mfg. Co. 122-123
Carter-Waters Corporation 113
Cast Iron Pipe Research Association 141-143
Ceco Steel Products Corp. 152-153
The Celotex Corp. 232
Cement Gun Company 206
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The Concrete Surfacing Machinery Co. 226
Contractors Register 252
The Curtiss-Wright Corp. 273

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Elgin Metalformes Corp. 192
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Esso Standard Oil Company 59
Euclid Div., General Motors Corp. 261

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Fate-Root-Heath Co. 234
Fenwal, Inc. 68
The Firestone Tire & Rubber Company 16
Flint Steel Corporation 114
Michael Flynn Mfg. Co. 18-19
L. B. Foster Co. 129
Foundation Equipment Corp. 285
Franki Foundation Co. 21
Freyssinet Co., Inc. 9

Gahagan Dredging Corporation 138
Gardner-Denver Company 106
General Motors Corp., Truck & Coach Div. 202-203
The Goodyear Tire and Rubber Co. 1
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Gulf Oil Corporation 132-133
W. & L. E. Gurley 154

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Harnischfeger Corporation 150
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A. C. Horn Div., Sun Chemical Corp. 32
Hose-McCann Telephone Co., Inc. 204
Huber-Warco Co. 212-213

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Johns-Manville Corp. 102-103

KW-Dart Truck Co. 241
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Kern Instruments Inc. 250
Kerrigan Iron Works, Inc. 88-89
Keuffel & Esser Co. 173
The Kinnear Mfg. Co. 120
Koehring Division 13
Koh-I-Noor Pencil Company, Inc. 78
Kohler Co. 31, 226
The Korfund Co., Inc. 181

Larsen Products Corp. 124
Lead Industries Assn. 199
Lehigh Portland Cement Company 193
LeRoi Div., Westinghouse Air Brake Co. 243
LeTourneau-Westinghouse Co. 264-265, 267, 269
Levinson Steel Co. 131
Lexsuco Inc. 95
Liberty Mutual Insurance Company 174
Link-Belt Speeder Corp. 194-195
Lipe-Rollway Corp. 245
Lord Electric Company, Inc. 256-257
The Lufkin Rule Company 262

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Madsen Works, Construction Equip. Div. 25
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Editorials

The Public Works Bill

It's not easy to say who was right—the President or Congress—in their respective stands against and in favor of including the 67 new project starts in the public works bill (see p. 45). From one point of view, further discussion is pointless, since Congress made sure the projects would be started by overriding the President's veto. Nevertheless, these projects are a matter of direct interest to the construction industry so that post facto discussion is not entirely out of order.

In the first place, it would have been better if the original public works bill rather than the second had been passed. By cutting the appropriations to all going projects by 2½%—to keep the total of the second bill near the President's request—Congress may well have caused some of these projects unnecessary difficulties.

Beyond this unfortunate aspect of the bill, however, it is the controversy over new starts that is of particular interest. It will be argued that the President's stand was more firmly based on conscience and principle. His position was that including new projects in the bill would promote inflation at a time when military and other expenditures were already exerting a dangerously inflationary influence. In contrast, Congress, it will be said, merely regarded the 67 projects as vote getters, and approved their start just to please the folks back home.

However much truth there may be in such an analysis, it must also be recognized that the President's stand was not entirely devoid of political motivation, nor was Congress' position completely lacking in principle. The President senses popular support for cuts in federal expenditures, a balanced budget and consistent opposition to inflation. Congress on its part did not by any means vote money for boondoggles, but chose projects that will eventually add to the nation's wealth.

It cannot be claimed, for example, that the $113-million Allegheny Reservoir is not a worthwhile project when it will add over a million more acre-feet of flood storage as protection for Pittsburgh and the vital industries along the Allegheny and Ohio Rivers. Nor can it be argued that the $60-million cost of the Trinity Dam Power Plant is an investment that can be long postponed, since the dam itself is already well under way.

The real difference between the President and Congress is one of timing. The President wanted to postpone the start on more flood control, irrigation, navigation and hydro-power projects until some future date. Congress decided to start them now.

Whether the decision to start these 67 new projects next year with an expenditure of about $50 million, plus the continuing commitment to complete them at a total cost of $800 million, will foster inflation, only time will tell. They could, on the other hand, afford a welcome lift to the economy during a possible deflationary period. And in any event they will add measurably and usefully to the nation's economic facilities.

The $50 million to be spent on these new projects next year out of the $1.285-billion total that the bill provides can hardly of itself create damaging inflation. It does, however, add to total federal expenditures, which are a significant factor in inflation, so that it behooves the construction industry to carry out all public works projects, old and new, with all the efficiency and economy that can be mustered.

The Concept of Concurrency

A contract award for an ICBM base is but a permit to negotiate change orders, said ENR's report last week on the headaches of missile base construction. So sketchy and so fluid have been the plans and specifications with which contractors have started work on the early Atlas and Titan bases that the only thing they could count on as firm was a rigidly fixed completion date. It is remarkable and praiseworthy that the bases are actually being built under these conditions, but they are definitely not the kind of conditions that should ever be imposed on a normal construction project.

The whole missile base program, as described last week (ENR Sept. 17, p. 21), is being pursued on a so-called concept of concurrency, which means that missiles must be manufactured and bases for firing them must be constructed even as research and development change and improve these missiles and their firing facilities.

That's a difficult concept—if not an entirely new one—for the construction industry. But construction is an industry that prides itself on being able to do the difficult when necessary. And in this missile base business, architect-engineers, contractors and Air Force and Army Engineers are once again demonstrating this capacity to do the difficult—indeed, what must seem to them at times to be the impossible—by making finished structures out of hazy, changing plans.

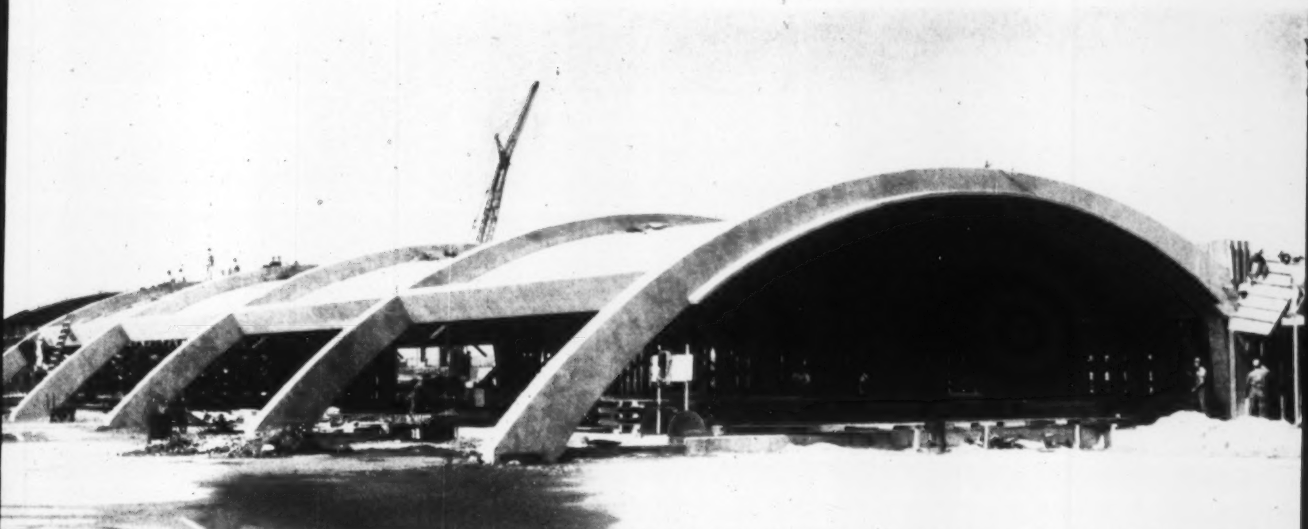
Capable as the construction industry is, however, in coping with the concept of concurrency in this most urgent missile base work, this is not the best possible concept to work under. The older, traditional concept—first designing what the owner wants built, drawing detailed plans, writing complete specifications, then taking firm, competitive bids that represent fairly well the actual cost of doing the work—is the standard way to achieve best possible construction at lowest possible cost.

There will always be crash programs such as the missile work. Traditions can rightfully be tossed out the window when time becomes critical, as in defense efforts. But traditions ought to be preserved when they are as soundly developed as the plan-design-specify-construct system—the normal owner-engineer-contractor relationship of our industry.

EDWARD D. KELLY, *President*
Interstate Construction Corp.,
Kansas City, Missouri

"We stripped this form in 3 days . . . with POZZOLITH concrete"

"This accelerated schedule saved us the cost of additional forms on the new Kansas City Air Terminal job"



NEW TERMINAL FACILITIES at Municipal Airport, Kansas City, Missouri • Contractor: Interstate Construction Corp., Kansas City, Mo. • Architect-Engineers: Cooper-Robison-Carlson-O'Brien, Kansas City, Mo. • POZZOLITH Ready-Mixed Concrete: Concrete Materials, Inc., Kansas City, Kansas

ROLLING FORM for thin-shell roof is stripped on third day. High early strength of POZZOLITH concrete allows accelerated production schedule . . . cuts contractor costs significantly.

"Concrete strength of 3750 psi in 3 days—that's the kind of performance we got with POZZOLITH concrete on the new Kansas City Municipal Airport Terminal job. Stripping our big rolling form on the third day enabled us to place one 48-foot roof shell section each week.

"To reach the required design strength in minimum time, the job called for extremely low-slump concrete . . . yet it had to be workable enough to consolidate around reinforcing steel in these 3-inch thin-shell sections. With POZZOLITH we got excellent workability, high early strength, and a superior finish with no honeycombing or cracks.

"The Master Builders field man worked closely with the ready-mix concrete producer and concrete technician on-the-job to aid in maintaining batch-to-batch uniformity—so important in critical concreting of this type. POZZOLITH concrete and Master Builders field service gave us an important edge over time and costs on this job."

For lowest cost-in-place . . . superior quality concrete—there's no equal to today's POZZOLITH. Call in the local Master Builders man to demonstrate how POZZOLITH can help put you ahead on your very next job.

The Master Builders Company, Cleveland 3, Ohio • Division of American-Marietta Company
The Master Builders Company, Ltd., Toronto 9, Ontario • International Sales Department, New York 17, N.Y.
Branch Offices in all principal cities.

MASTER BUILDERS®
POZZOLITH*

**POZZOLITH is a registered trademark of The Master Builders Co. for its concrete admixture to reduce water and control entrainment of air and rate of hardening.*

South Dakota can employ stage construction on highways...with ASPHALT

Second step in stage construction on U. S. Route 212 in South Dakota. Laying plant-mixed Texaco Asphaltic Concrete over old Road-mixed asphalt pavement.

Type of rollers used to assure satisfactory compaction of new Texaco Asphaltic Concrete wearing surface.

An important advantage of asphalt to highway officials is that it lends itself so well t long range stage construction. South Dakota demonstrates this on the 9-mile section o U. S. Route 212 illustrated here.

Some time ago, the state constructed a relatively low cost type of asphalt surface on this highway by the Road-mix method. After i had served traffic for a number of years an had become thoroughly consolidated, th highway was ready for the second stage. A high-type plant-mixed Texaco Asphaltic Concrete pavement was laid this year over th original Road-mixed asphalt surface. Th new and the old asphalt courses combine t form a rugged pavement which will serve th highway's increased traffic for many mor years, with a minimum of maintenance.

Stage construction of highways with asphalt enables South Dakota to spread the cost over the years, while giving traffic a durable, all-weather pavement at all times.

Helpful information on Road-mixed and Plant-mixed asphalt paving is supplied in a pair of free Texaco brochures. Copies of these can be had by writing our nearest office. No obligation.

Contractor
HAGGART CONSTRUCTION CO.,
Fargo, S.D.

TEXACO INC., Asphalt Sales Div., **135 E. 42nd Street, New York 17**
Boston 16 (20 Providence St.) • Chicago 4 (332 So. Michigan Ave.) • Houston 1 (720 San Jacinto St.)
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